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STEEL

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

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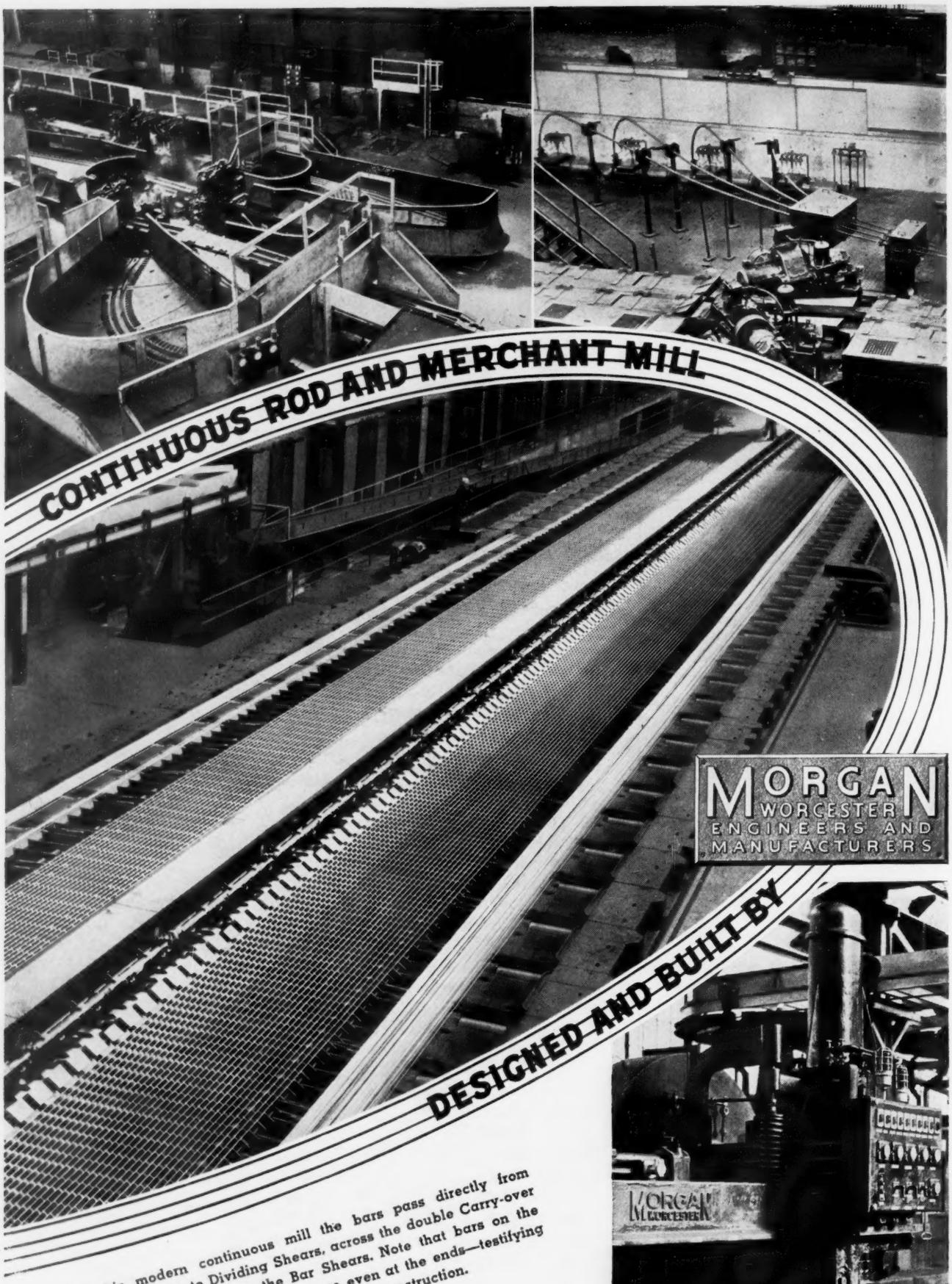

In this modern continuous mill the bars pass directly from Finishing Train to Dividing Shears, across the double Carry-over Cooling Bed and on to the Bar Shears. Note that bars on the Carry-over Bed lie straight and are even at the ends—testifying to the accuracy of Morgan design and construction.

R44

As the Editor Views the News

■ A 2-POINT rise in steelworks operations, the seventh consecutive weekly gain, lifting the national average to 43.5 per cent, finds steelmakers only moderately cheerful (p. 13) concerning the after-Labor day outlook. Dominating note is one of hopeful waiting; chief question, "how much will the anticipated volume of automotive and other orders offset high wages, low prices?". . . . The wage-price experiment, in line with government ideas, has proved costly (p. 28) as indicated by the industry's loss of $18,400,000 in the first half. . . . A number of industrial barometers, as shown by STEEL's enlarged Business Trend section (pp. 31-33) have registered consistent improvement. . . . Machine tool builders (p. 16) look for a 30 per cent increase in September orders.

• • •

Waiting on Washington

Unquestionably the main reason for industry's "wait-see" attitude, despite encouraging indicators, is the growing number of official irons in the fire at Washington (p. 30) touching practically every phase of activity, and disconcerting in their implications. . . . The President apparently has acquiesced (p. 22) to demands by the A. F. of L. and business men, for changes in the Wagner act's administration. . . . Assistant Secretary of State Berle's candid memorandum to the monopoly investigating committee (p. 15) tramps on the toes of New Dealers, as well as labor, big and little business. When writing it, Mr. Berle didn't intend it to be published hence it is interesting as a "brain truster's" frank expression.

• • •

See Labor First!

STEEL was curious to know why Chicago prohibited further construction of all-steel houses, and now (p. 17) the story can be told; it appears labor politics had much to do with it. One alderman dubbed them "tin houses," and the second largest steel producing center in the country ruled against one of the most promising outlets for steel tonnage. About the only comment that can be made is some cities once barred automobiles from their streets. . . . One in every 16 workers (p. 24) is employed by governmental agencies, excluding emergency WPA and CCC workers — one reason steelmakers paid $46,000,000 in taxes (p. 28) in the first half, about 2½ times the amount of their net loss.

• • •

Control Is Improved

Improvements in automatic control of open-hearth furnaces (p. 34) have made possible better steel at about half former energy consumption. Equipment also extends life of furnace by avoiding excessive roof temperatures. . . . Modernization (p. 38) at a Dover, O., rolling mill, recently completed, features efficient flow of material through the plant. . . . Welding speeds of 150 feet per hour are obtained (p. 43) in production of railroad passenger car frames by use of the Union Melt process. . . . An automobile manufacturer combines presses and conveyors (p. 46) to facilitate sheet metal forming operations. Dies are conveniently stored in adjoining open floor sections. . . . Glass-fabric covered magnet wire (p. 48), unaffected by high temperature or humidity, is now commercially available.

• • •

An Aid to Construction

Of several new accessories developed for use in steel construction work, the safety-hook bolt head and accompanying deep washer (p. 37) appear to offer many interesting possibilities, especially in construction work where a high degree of flexibility is desired. . . . Unique handling system is developed in an automobile body plant (p. 40) to load and unload 14 bodies simultaneously by simply pushing a button. . . . An air unloader used on a resistance welder with six indexing heads (p. 45) helps operator keep up with automatic indexing cycle. . . . Electric lock-rod operating device (p. 49) eliminates loss of open-hearth charging boxes and reduces operator fatigue. . . . Use of bright nickel plating in manufacture of flatirons (p. 50) eliminates a polishing operation.

E. L. Shaner

Inland Research Scores Again

Ledloy—Another Metallurgical Achievement that Is Saving Money for Steel Users

Again, the pioneering of Inland metallurgical research has, in effect, put money into steel users' pockets.

The recently announced development of INLAND LEDLOY has enabled metal working plants to speed up their machining operations 30% to 60%. In terms of dollars, savings like the following examples are typical:

In the making of a case carburized worm shaft, $47.85 machining cost is being saved per ton of steel used.

The manufacturer of a socket ball control joint is saving $37.91 per ton by using Inland Ledloy 1120 instead of ordinary SAE 1120.

Finding ways of making better steel for each customer's purpose is the basis for Inland personal service. The occasional development of a new kind of steel, such as Inland Ledloy or Inland Hi-Steel (high tensile), merely emphasizes the extensive modern laboratory facilities which Inland makes daily available to all steel users.

Often but a small change in the surface characteristics of a steel sheet, or special control over its physical properties, makes a big difference in the costs and results of a forming operation; or the suggestions of an Inland engineer may help to save time and material in the use of structural steel.

More companies today than ever before are utilizing these special services to supplement their own technical staffs. We believe you would find this a worth-while practice to follow.

INLAND STEEL CO.

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SHEETS STRIP TIN PLATE BARS PLATES FLOOR PLATES STRUCTURALS PILING RAILS TRACK ACCESSORIES REINFORCING BARS

Restrained Optimism in Steelmakers' After-Labor-Day Outlook

■ MODERATE though spotty improvement in the iron, steel and metalworking industries is expected to follow Labor day. Steelmakers believe strong demand for 1939 model automobiles and maturing of government construction projects, added to vigorous miscellaneous requirements, will lead the way.

Contributing factors will include increased sales of machine tools and equipment, pickup in agricultural implement industry, sustained shipments to shipbuilders, and possibly larger railroad buying.

The autumn upturn will mean more employment, larger payrolls and higher operations, but it will not mean much prosperity for the steel industry. Present low prices and peak wages appear to make a third quarter deficit inevitable. Last quarter showing probably will depend on what action is taken on wages and prices.

Some leading independents have figured that on a basis of present costs and prices, their "break-even" point now is 60 to 62 per cent of capacity. This would necessitate a 50 per cent increase over August rates.

Upturn Is Steady, Slow

Contrary to the traditional pattern, recovery in steel has progressed steadily, though slowly, since the June low. August ingot production is estimated at 2,445,000 tons, compared with July's 1,982,058, and June's 1,638,277 tons. Additional blast furnaces have been blown in this month. Lake Superior iron ore shipping has been accelerated slightly, although the season's total movement is indicated not to exceed 17,000,000 tons.

Chief hope for continued improvement lies in expectations for brisk demand for new model automobiles. Estimates by motor car builders range up to 1,000,000 units above current year's output. The automotive industry points to clearance of the used car market, larger payrolls due to the government's pump-priming program, and the moderate upturn in private industry.

Effects of the pre-election spending campaign already have been felt in cleaning up the used car market. In many localities where government work projects have been started, automobile dealers report their stocks of used cars exhausted by WPA purchases.

Pre-Election Spending To Help

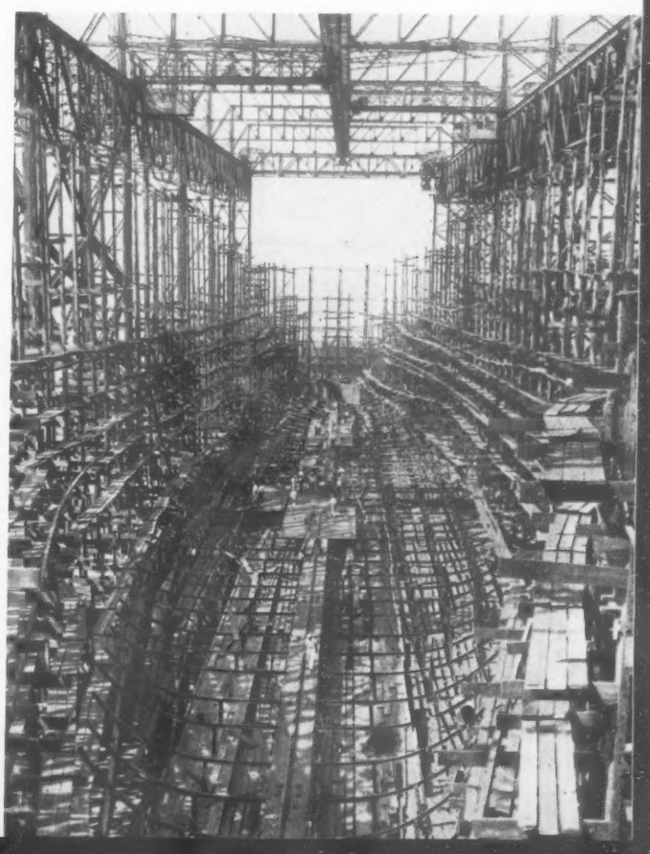
Government construction projects maturing within the next 60 days will require a considerable amount of pipe, reinforcing and structural steel. These projects already are taking some heavy tonnages. STEEL's compilation of concrete reinforcing awards reveals consumption of this type material to date in 1938 is running ahead of 1937. Practically all awards in recent weeks are for public construction.

Comparison of 1938 and 1937 structural steel awards shows a similar increase in government work, although total awards so far this year are trailing due to absence of private building.

Machine tool builders and dealers expect a 30 per cent increase in September and further gains through the remainder of the year. The automotive industry will contribute most heavily to the upturn. Shipyards and agricultural implement manufacturers, it is reported, will increase tool purchases. Aircraft builders will continue active, and as the industrial tempo quickens, an influx of orders from the smaller metalworking plants is anticipated. In most instances buying will be for replacement of tools grown obsolete.

Agriculture, with income for last half of 1938 estimated at only 15 per cent below the last six months of 1937, should hold up its end of steel buying. Wire demand has already picked up in the Southwest and will move northward as harvests are completed. Farm implement factories soon will start production of next spring's requirements.

Eastern mills will feel the stimu-



■ **Shipbuilding is one of the promising outlets for steel this fall; currently, presenting the best market in the East. Newport News Shipbuilding & Drydock Co., Newport News, Va., is fabricating this 34,000-ton ship "largest American-built liner", as successor to the famed LEVIATHAN, for United States Lines. Construction of the hull will require 16,000 tons of steel. The vessel will be 723 feet long, accommodate 1858, passengers and crew; to be launched next July**

lus of shipbuilding, both government and private. The navy program will string out over several years and sizable allotments will come to mills from time to time. Emergence of the maritime commission's program for rehabilitating the merchant marine already has spurred this type of shipbuilding.

Aircraft construction, outstandingly active through recent months, promises to continue on a high level.

Less favorable is the outlook for railroad buying due to the carriers' financial predicament. However, car, locomotive and rail buying would not have to be heavy to show an increase over recent weeks. Should carloadings expand to any degree, the roads might be driven into the market late this year.

Utilities are not counted on for heavy purchases. Exports are likely to be limited by exchange conditions, slackening in foreign industrial expansion, less feverish armament.

Seasonal decrease in consumption by container manufacturers will follow the canning season close in September, and little is expected from this source.

Large-scale expansions in private enterprise—so necessary for good steel business—are not in sight. Fear of federal policies, peak wages and labor conditions, excessive taxation, punitive legislation, general uncertainty, still prevent the free flow of capital.

District Steel Rates

Percentage of Ingot Capacity Engaged in Leading Districts

	Week ended Aug. 27	Change	Same week 1937	1936
Pittsburgh ...	33	+ 3	83.4	74
Chicago	37.5	+ 1.5	86.5	72.5
Eastern Pa...	30	None	65	50.5
Youngstown..	43	+ 2	73	79
Wheeling	54	None	89.5	98
Cleveland	41	— 2	79.5	79.5
Buffalo	46.5	+ 2.5	86	81
Birmingham..	53	None	96	64
New England.	50	None	60	85
Cincinnati ...	65	None	93	76
St. Louis.....	33	— 3	84	†
Detroit	60	+ 8	100	100
Average....	43.5	+ 2	83	73

†Not reported.

PRODUCTION

■ STEELWORKS operations last week advanced in five districts, were unchanged in five and showed minor losses in two. The national average advanced 2 points to 43.5 per cent. Schedules for this week indicate further advance.

Youngstown, O.—Up 2 points to 45 per cent as Carnegie-Illinois Steel Corp. added an open hearth. This makes 41 open hearths in operation, while two bessemer converters are on part time. Ten blast furnaces are active. Indications are for the same rate this week.

Cleveland—Off 2 points to 41 per cent because of minor adjustments. The rate likely will continue at 41 this week.

Birmingham, Ala.—Unchanged at 53 per cent, with 12 open hearths in operation. Tennessee Coal, Iron & Railroad Co. has blown in two additional blast furnaces and Republic Steel Corp. one, while Sheffield Steel & Iron Co. is scheduling an additional stack Sept. 1.

St. Louis—Dropping of one open hearth caused a loss of 3 points to 33 per cent. The same schedule is indicated for this week.

Cincinnati—For the third consecutive week operations held at 65 per cent. Some reduction is expected this week as mill stocks have been built up.

Central eastern seaboard—Steady at 30 per cent for the third consecutive week, with output slightly greater than bookings.

New England—With one producer operating at 75 per cent, the rate for the district is 50 per cent.

Buffalo — Addition of one open hearth resulted in a rise of 2.5 points to 46.5 per cent. One interest is operating at its best rate since October.

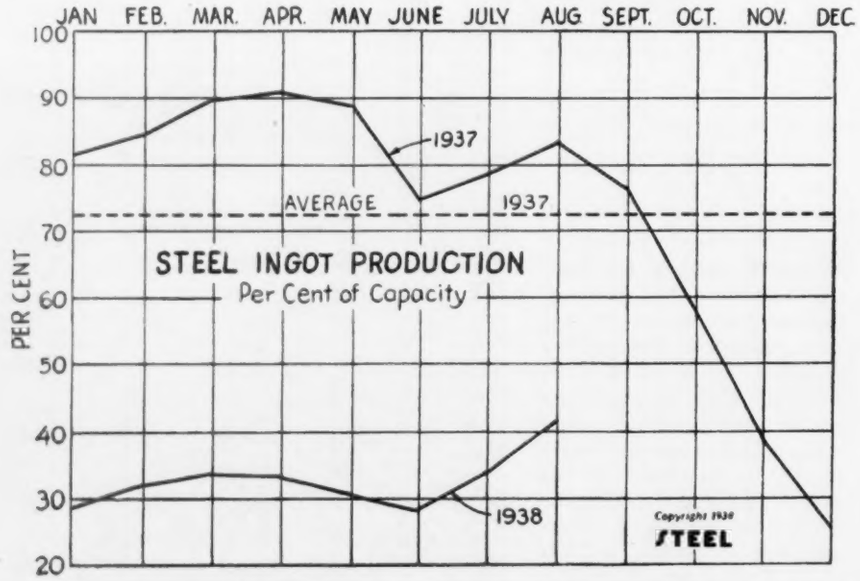
Detroit — Up 8 points to 60 per cent, the highest rate since November. One open hearth was added Monday and another Tuesday. The rate this week is expected to rise further as 13 furnaces will be on all week.

Pittsburgh — With production at the end of the week at 34 per cent the average was 33 per cent, an increase of 3 points over the preceding week. Carnegie-Illinois Steel Corp. lighted another blast furnace late last week.

Wheeling—For the fourth consecutive week production held unchanged at 54 per cent.

Chicago—Up 1.5 points to 37.5 per cent, within a half-point of the year's peak during the first week of August.

Recovery Begins Year After Strike



■ **Steelworks operating rate moved in the same direction in July and August as it did in those months last year, but more than 45 points apart. Last year, following the steel strike in June there was a temporary recovery of balance —and then the long slide. The present trend suggests that the industry just now is beginning to recover from the real aftermath of widespread labor disturbance and uncertainties engendered more than 12 months ago**

Expect 40,000 at Power Exposition

■ More than 230 manufacturers thus far have engaged exhibit space in the thirteenth national Exposition of Power and Mechanical Engineering in Grand Central Palace, New York, Dec. 5-10. With an upswing in business anticipated for this fall and winter, an attendance of over 40,000 registered visitors is expected. Charles F. Roth, president, International Exposition Co., Grand Central Palace, New York, is show manager.

Monopoly Investigators Receive Plans for More Regulation

■ CONFIDENTIALLY, A. A. Berle Jr., assistant secretary of state and New Deal adviser, thinks many New Deal tenets have their faults. He also has some sharp criticism for labor unions, big and little business, federal agencies, financial institutions and economic theories.

In a private 23-page memorandum to the national economic committee, Mr. Berle expresses need for a new economic code. Suggested, among other things, is a cartel for the steel and certain other large industries.

Mr. Berle's report, prepared at request of several monopoly investigating committee members, was designed to be confidential, expressed his personal views, not those of the state department. Soon after it was submitted, brief distorted abstracts were published, hinting the report was not consistent. This did not appeal to Mr. Berle's idea of fair play and so he released the entire report.

Neatly questioning and rebuffing all sorts of rigid economic conceptions, "the original brain truster" sets forth a program whose objective is to provide more, better and cheaper goods; more and better paying jobs; continuous ready access to capital financing needed to create and maintain additional plants. The program contemplates the continued existence of both big and little business and a variety of controls, including competition, regulation and direct public production.

In general, he says, the attempt to legislate competition "does not work out" and that in certain fields controlled cartels may be better than competition. Mr. Berle adds that a fair criticism of the New Deal technique is that it has "indulged shotgun imposition of regulation without adequate definition of standard."

Urges Workable Plan

Instead of starting off with preconceived theories, he suggests the investigating committee should search for an organization of business that actually works.

"Second, the standard must be whether it supplies the existing and developing wants of the people as they appear;

"Third, that this involves the provision of an adequate supply of goods;

"Fourth, a distribution system that takes these goods toward known wants to the maximum degree possible;

"Fifth, that the system must provide a maximum number of people with means of satisfying those wants through a contribution to the system;

"Sixth, that the system must provide the people engaged in the process with a manner of life which at least tends to satisfy a fair proportion of their wants;

"Seventh, the system must evolve a method of organization that does not interfere unduly, actually or potentially, with individual liberty;

"Eighth, that there is no need to assume that these tests will be met by any single system or any single standard of size or set of practices at any given point."

Suggests Cartelization

Cartelization or some similar organization may be necessary in fields where the unit of industry is inherently large, as in steel, suggests the report. Where planning of output is inherently necessary, as in automobiles, natural resources, especially oil, and possibly copper and textiles, Mr. Berle sees need for regulation. Regulated monopoly or government ownership is suggested for certain non-competitive fields, such as transportation and power.

He proposes equality of access to all technical improvements on standard terms, thus breaking "the patent monopoly."

In direct conflict with assertions by Solicitor General Robert Jackson and Harold L. Ickes, secretary of the interior, Mr. Berle denies small business is necessarily more humane than big business and ponders whether the competitive textile industry is better than the steel industry.

He belittles the 60-family control theory and says concentration of economic power has nothing whatever to do with the private fortunes of individuals.

Mr. Berle criticizes as short-sighted the demand of labor unions for high hourly wages. Labor, he contends, would be much better off with an annual income standard and permanency of jobs.

Circumstances leading to publication of the Berle memorandum make obvious a lack of agreement in ideas in the monopoly investigating committee. Scope of the probe and its direction probably will not be determined until the full committee meets early this fall.

Meanwhile various co-operating government departments are busy on their especial problems. Dr. Willard Thorpe of the commerce department, for instance, is preparing a questionnaire to be sent to all trade associations. The questionnaire will include about 25 inquiries about aims and work of the association, its history, membership and other questions considered pertinent by government economists.

Dr. Thorpe last week expressed enthusiasm over the interest in the investigation shown by business. He emphasized the desirability of maintaining the investigation on a

Long, Slender and High, with 11,200 Tons of Steel

■ **Orange bridge over Neches river at Port Arthur, Tex., will be opened Sept. 7. Highest in the South—extreme height 230 feet—it has a vertical clearance of 176 feet, sufficient for passage of all ocean vessels. Length, including approaches over marshland, is 5.7 miles; main span is 1½ miles long. Construction cost $2,750,000; required 11,200 tons of steel. NEA photo**

scientific and objective plane and expressed his belief that full co-operation can be obtained from business for an objective, fact-finding study.

Leon Henderson, executive secretary of the committee, says the first subpoenas will be ready soon. First subpoenas will call for records, and, it is hinted, will be issued to steel and oil companies. Later subpoenas will be for personal appearances. Announcement of dates for hearing are expected soon after Labor day.

25 Per Cent More Steel In Use Than in 1929

■ Steel in use in the United States at the close of 1937 reached a new peak, 1,050,000,000 gross tons, compared with 1,020,000,000 tons at the end of 1936, according to the American Iron and Steel institute.

This was the fifth consecutive yearly increase, and brought the total 25 per cent above the 1929 figure of 840,000,000 gross tons.

Included are estimates of steel in buildings, bridges, dams, railroad equipment, automobiles, refrigerators, cutlery and other consumers' goods.

Steel in use in 1937 represented an average of 18,100 pounds for every person in the country. In 1929 the per capita figure was approximately 15,400 pounds.

Since 1900 the tonnage in use in the country increased nearly 16 times as fast as population. At the beginning of the century the amount was equivalent to 2600 pounds per capita. The 600 per cent rise since 1900 in per capita use indicates the advance in living standards during this period.

LABOR

■ A new wave of wage demands and an acceleration of technological advance appear to be the probable consequences of the federal wage-hour law, in the opinion of Allen W. Rucker and N. W. Pickering, business economists. Farrel-Birmingham Co., Ansonia, Conn., has published a preliminary study of the law, summarizing their findings.

They see an accentuated shift in normal distribution of the manufacturing industry's total wage fund. The prevailing shift is away from heavy industry. As an illustration, the iron and steel industry group suffered a contraction in its wage fund from 12.3 per cent of the national wage fund in 1929 to 11.6 per cent in 1935. Reductions of this magnitude, according to Messrs. Rucker and Pickering, virtually compel industry to seek lower wage costs by mechanization and reduced rates, at the same time impelling labor to seek higher wage rates.

The study is entitled: "Coming Problems Created by the Fair Labor Standards Act of 1938."

SEPTEMBER BAR MILL WAGE CARD UNCHANGED

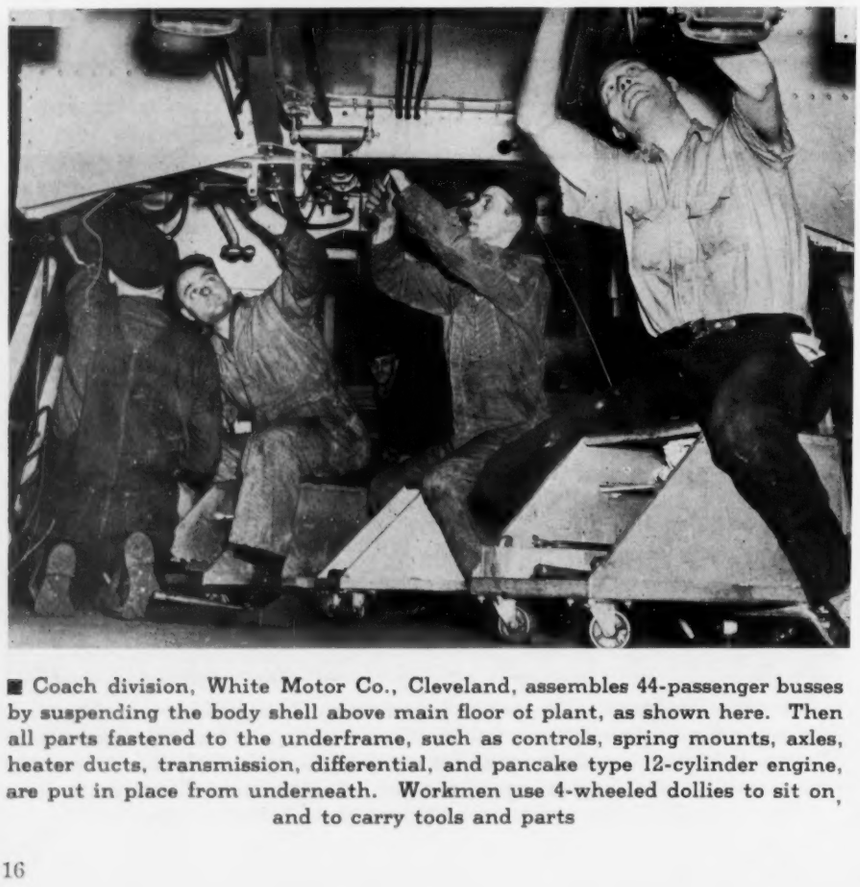
Wage rates for puddlers and bar mill workmen affiliated with the Amalgamated Association of Iron, Steel and Tin Workers for September are unchanged from the August rate, S. C. Leonard, secretary-treasurer, Western Bar Iron association, announced last week.

Card rate on boiling, bar and 12-inch mills is $2.25; for guide and 10-inch mills, $2.35. Present rate entitles boilers or puddlers to a wage rate of $13.05 a ton.

METALWORKING EMPLOYMENT IN JULY LOWEST SINCE 1935

Employment at leading metalworking centers continued to decline during July, reaching the lowest level since September, 1935, according to the National Metal Trades association. Index for 22 principal cities was 74.4 per cent of the 1925-1927 monthly average, compared with 75.4 in June and 105 in July, 1937. This was the tenth consecutive monthly decrease but leaves employment still well above the low of recent years of 46.1, attained in April, 1933. Principal reductions in employment during July occurred in automotive and farm equipment manufacturing centers.

Assemble Busses Overhead



■ **Coach division, White Motor Co., Cleveland, assembles 44-passenger busses by suspending the body shell above main floor of plant, as shown here. Then all parts fastened to the underframe, such as controls, spring mounts, axles, heater ducts, transmission, differential, and pancake type 12-cylinder engine, are put in place from underneath. Workmen use 4-wheeled dollies to sit on, and to carry tools and parts**

FINANCIAL

■ Alan Wood Steel Co., Conshohocken, Pa., reports a net loss for the first half this year of $108,340, against a net income of $770,119 in the period last year. Net sales and operating revenue amounted to $5,009,314, less than half the $10,686,128 in the first six months of 1937.

* * *

Keystone Steel & Wire Co., Peoria, Ill., reports for the fiscal year ended June 30, a net profit of $727,543, equal to 96 cents a share on 757,632 shares. This compares with a net of $1,160,857 or $1.53 a share for the preceding 12 months.

* * *

American Locomotive Co., New York, reports a net loss of $841,657 for the first half. Operating loss for the period amounted to $776,098. Cumulative dividends on preferred stock in arrears, June 30, amounted to $30.25 per share on 351,961 shares outstanding.

* * *

Directors of Budd Wheel Co., Philadelphia, have declared the regular quarterly dividend of $1.75 per share, plus a participating dividend of 25 cents per share on preferred stock, payable Sept. 30 to holders of record Sept. 16.

Labor Politics Behind the Scenes in Chicago's Rejection of Steel Houses

■ CHICAGO, one of the country's leading steel producing centers, will have nothing to do with all-steel structures—or "tin" houses, as one of her councilmen describes this type of dwelling.

In fact, the city recently decided to prohibit her citizenry from building such structures, including not only homes, but also gasoline service stations and other buildings where the all-metal type of construction might be employed.

Chicago is in the process of overhauling an antiquated building code. As was to be expected, many new building materials and building practices which have come into use in recent years required considerable attention in the drawing up of a new and up-to-date code. The committee of qualified building authorities which undertook this work did not attempt to include exact specifications for all-metal structures, because of the newness of the product and the likelihood of future changes in design. It was specified, however, that exterior walls should be not less than 1/40-inch in thickness.

This specification was included in the code covering noncombustible dwellings, one of the types of buildings considered.

When the recommendation was presented to the sub-committee of the city council intrusted with the task of preparing the new code, the noncombustible section met rough hands. Seemingly, the subcommittee was not impressed by the all-steel structures developed to date. In any event, Alderman James J. McDermott, chairman of the group, referred to the all-steel dwelling as a "tin house" and the section was rejected.

There was no detailed explanation of the advantages and disadvantages of this type of structure, nor explanation of why Chicago citizens should not be permitted to build an all-steel home if they so chose. In Alderman McDermott's opinion such houses were "tin," and down went the thumbs of the council subcommittee.

Opposed by Unions

If rumor can be believed—and it has considerable plausibility—there is more beneath the surface than appeared at the hearing. It is no secret that organized building labor opposes the use of any construction methods or materials that curtail the number of man-hours required in the building industry. Prefabricated structures cut into the amount of work available for carpenters, bricklayers and others, consequently the building trades unions look with disfavor upon the development of methods for the manufacture of quickly assembled buildings. Service stations made of steel framework covered by enameled steel sheets are a case in point. They can be put together quickly, with a minimum of skilled labor.

It is also well known that the various unions identified with the building trade in Chicago are well organized and a power to be reckoned with. Many a manufacturer from other cities has had a taste of this power in the course of preparing exhibits at various Chicago conventions and expositions. Consequently, there was little surprise when the council prohibited the building of structures which take work away from a highly-organized group of workers and give it to another group whose voice does not reach the council chambers.

Other inferences are being drawn from this situation. The principal one is that if a highly acceptable all-steel house had been developed by now and was in active demand, neither Chicago nor any other city likely would have sufficient courage to bar it.

Chicago, of course, does not prohibit use of steel framework in a building—provided it does not have an all-metal exterior. Some of the distaste for the latter type is directed against the small, portable metal houses which, despite their utility value, leave something to be desired in appearance.

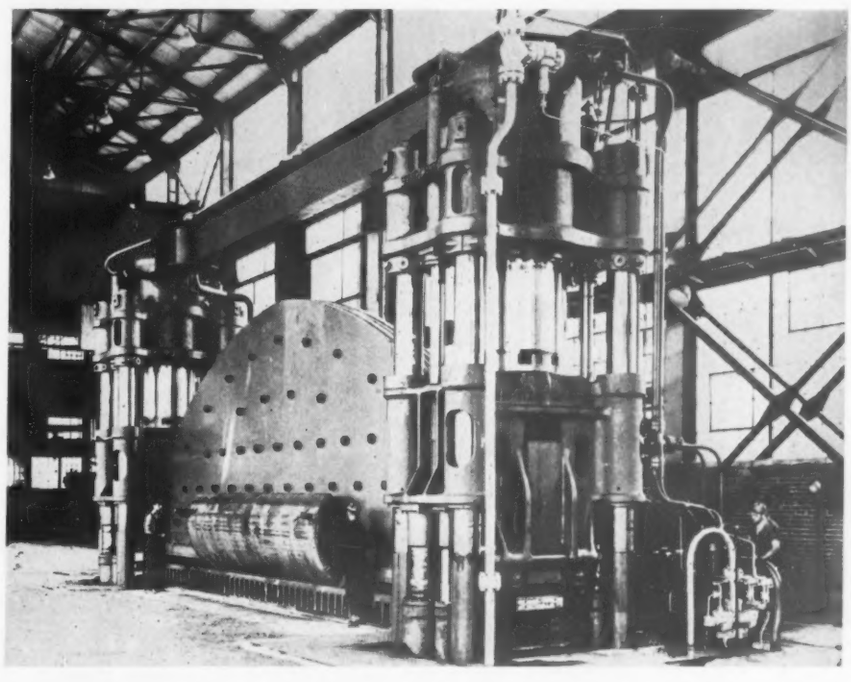
The absence of any organized opposition to the action taken at Chicago also discloses that a large job remains in educating the public to the advantages of all-steel construction, or developing such a structure that can compete in quality, appearance and cost with houses built of other materials, according to architects and building engineers.

Bends Steel Plates 40 Feet Long, 8 Inches Thick

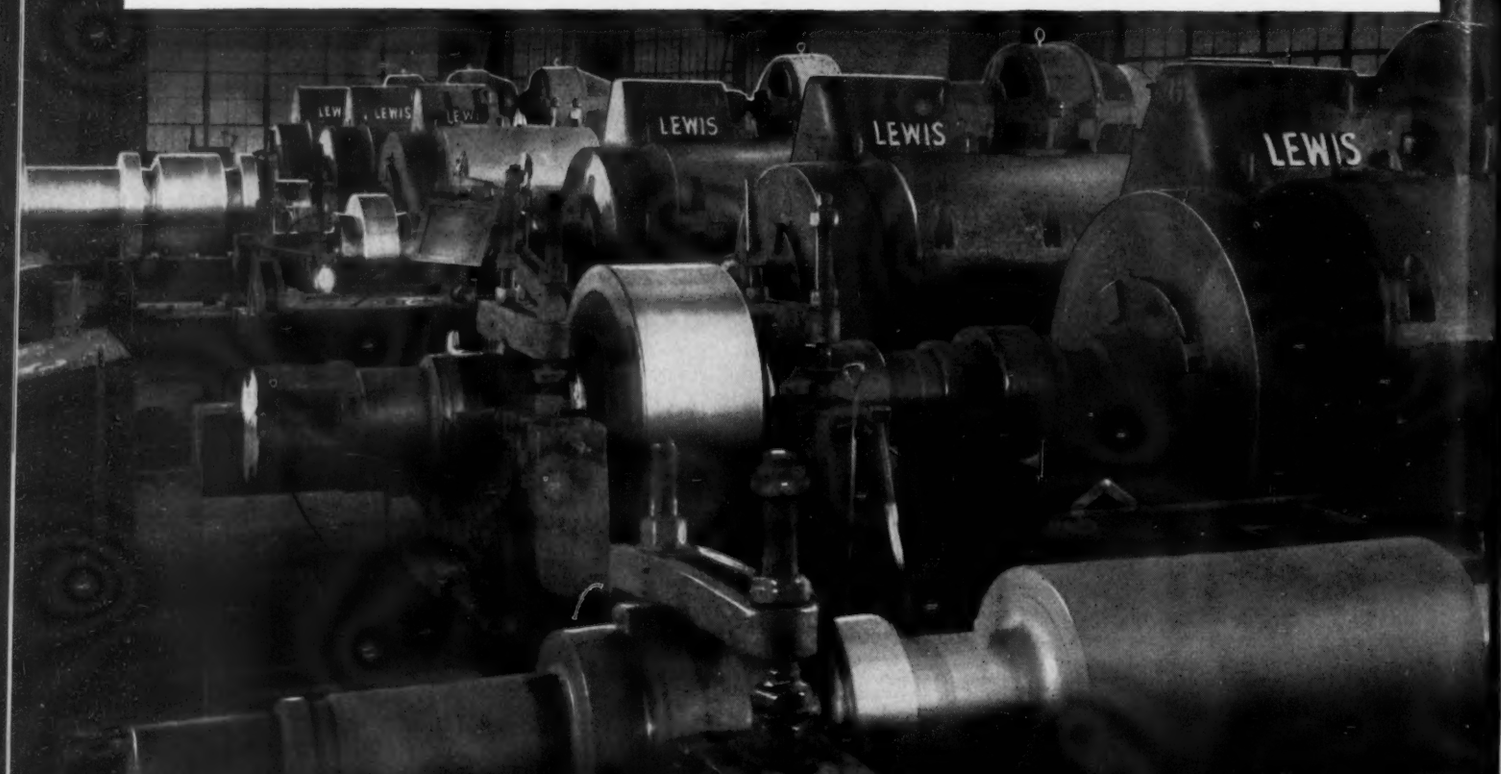
■ Baldwin-Southwark Corp., Philadelphia, recently built and installed in Combustion Engineering Co.'s Chattanooga, Tenn., plant this 2,000,000-pound bending press, believed to be the world's largest. Of 6000-ton capacity, it bends steel plates up to 40 feet in length, 8 inches thick, into semicircular shapes for high-pressure drums.

Machine consists of two specially designed vertical presses each of 3000 tons capacity, connected by bending beams of steel plate construction 52 feet in length, 15 feet deep and 20 inches thick. While only the top beam is visible, a similar bottom bending beam is below the foundation line.

Unique features are an equalizing arrangement of pressure on both main cylinders to take eccentric loading and, also, a special swiveling and thrust block arrangement on the moving beam. The latter permits eccentric loading without side strains on either press.



LEWIS HEAVY DUTY ROLL LATHES



Seven Lewis 60" Heavy Duty Roll Lathes on duty in large steel plant. Four 42" Lathes are also part of this installation.

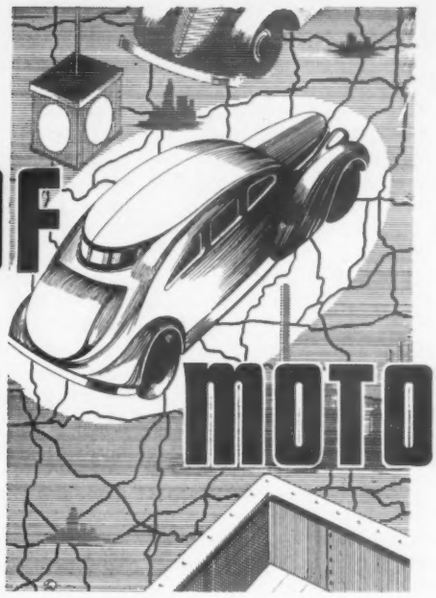
★ **LEWIS LATHES are massive yet compact—quiet running with ample power. They have a wide speed range with machine cut gears and oversize roller bearings throughout. For the utmost in efficiency and reliability with low maintenance and freedom from breakdowns, specify LEWIS ROLL LATHES.**

LEWIS FOUNDRY & MACHINE

DIVISION OF BLAW-KNOX CO.

PITTSBURGH, PA.

MIRRORS OF MOTORDOM



DETROIT

■ WITH the preview season now officially launched and publicity departments beginning to send out their so-called "smoke-out" stories, a review and consolidation of new model features previously referred to in these pages with some not yet touched upon, may serve to give the reader more or less of a composite picture of the automobile, genus 1939.

These preview affairs, staged with elaborate finesse, are of course entirely off-the-record as far as going into details is concerned, but these days when stocks of 1938 models are virtually exhausted and production departments are straining every muscle to get the new jobs rolling smoothly, sales forces are not too disturbed over an occasional hint in public as to what their offsprings will have to attract the buyer.

So, let's go once over the new models lightly from stem to stern, noting the changes and advances which engineers have worked out.

Radiator grilles. Here is probably the major change readily apparent in new models. Trend is to a three-unit grille—a central section flanked by two fender or catwalk grilles. Mostly die cast, a few will be assemblies of stamped chrome-plated steel. All General Motors lines will be die cast, excepting Chevrolet. Chrysler grilles are die cast; Plymouth, Dodge and De Soto are steel. Nash, Studebaker, Hudson, Lincoln Zephyr also are using die castings.

Bars in these grilles are vertical in some cases, horizontal in others. The Zephyr, for example, is changing from horizontal bars to vertical bars. Studebaker will use the horizontal type. Others use a combination, horizontal in the center grille, vertical in the catwalk grilles.

Resemblance of the new front ends to the style initiated this year by the Zephyr is most pronounced. Designers emphatically declare they have not copied another motif but have simply followed a trend. A recent survey of automobile owners disclosed this treatment to stand practically at the top in public favor. Representatives of one company using this style next year say their engineers had worked out the idea years ago, but had put it on the shelf as being too advanced to appeal at the time.

At any rate the idea of using a low radiator grille and extending it outward across catwalks has taken the industry by storm.

Springing. Few major changes will be apparent in suspension systems. Plymouth and Dodge are returning to coil springs in the front, but of a much larger size than used formerly and of Amola steel. Oldsmobile is carrying out the Buick idea of introducing coil springs on rear wheels. Chevrolet is changing its independent front suspension to the open coil type.

Bodies. Entirely new body de-

BY A. H. ALLEN
Detroit Editor, STEEL

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◆

Molders Ride As They Cast Engine Blocks

◆

■ One of the first divisions to start when a new model goes into production is the foundry. Here molds for Pontiac engine blocks move along a conveyor line, while workmen ride alongside on an escalator synchronized with the mold line. The ladle is suspended from an overhead monorail and moves along at the same speed. This line has capacity of 120 blocks per hour. Note openings in the background for the ventilating system which clears the air of dust, fumes and heat, raising efficiency of the line by nearly 20 per cent

signs will be numerous and in general will carry out the pronounced slope and sweep of the rear contour, eliminating protruding trunk compartments. This is what designers call the "fast back" and while it does considerably improve streamlining, it complicates the problem of rear seat headroom and visibility from rear windows. But these difficulties have been surmounted by lowering rear seats and increasing the size of the rear window.

Front Seats Wider

Several inches has been added to front seat width in these new bodies which, together with elimination of the gearshift lever from the floorboard, has further improved the comfort of front seat passengers. Running boards are inches narrower and, like little toes, are gradually becoming functionless and extinct. Buick, it is reported, will offer one model with no running boards, similar in treatment to the Cadillac 60 special model for this year.

Windshield areas are larger, adding to visibility. Further use will be made next year of the Hancock rotary door latch, first used by Studebaker this year. Easier closing and a tighter fit are claimed for this type of latch which in place of the conventional tapered in-and-out latch bar uses a rotating member with cross section like a plus-sign.

Concealed door hinges also will be seen on some 1939 models, and it appears that within the next year or two all of the present strap-type hinges which project from the body exterior will have disappeared. Use of the concealed type hinge, of which there are several designs, necessitates a change in piliar construction, but cleans up exterior lines appreciably. Concealed hinges also will be used more widely on rear compartment doors.

Use New Finishes

An important change in body finishes has been made by Dodge, De Soto and Chrysler for next year, involving the installation of a large amount of new finishing equipment. Essentially the change involves use of the synthetic lacquer type of finish such as used now on Plymouth and Ford.

Lights. Majority of front headlamps on new models will be recessed into the front fenders, and mounted flush, such as on the present Ford, Zephyr and Graham. All Chrysler lines have adopted this type of lamp, as well as some of the General Motors lines. It is pointed out that some saving is possible with this headlight, inasmuch as no careful finishing of the lamp body itself is required since it is located underneath the fender. A bright metal bezel, either die cast or stamped, sets off the lens from the fender metal. Against the saving in finishing, however, must be placed the added cost of proper adjustment and focusing, which is more difficult when the lamp is recessed into the fender than when it is mounted on a post or bracket. Maintenance cost of this type of headlamp likely will be somewhat higher, too, because of the more difficult adjustment. An increasing number of states, by the way, are requiring by law regular checking and adjustment of headlights.

Tail lights also are being recessed into rear fenders, and in some models small reflector buttons of prismatic glass are being mounted directly over the tail lights.

Mechanical changes. Refinements are prevalent throughout power plants and chassis. Compression ratios will be higher. More attention is being paid to treatment of moving parts in engines to provide closer fits and reduce wear.

Gearshift levers mounted on steering columns, and operating by conventional means, will be standard next year on a number of models, indicating the public has been quick to "take" to this type of shift lever. For the moment the automatic or semiautomatic type of transmission appears to be overshadowed in favor by the manually operated shift with relocated shift lever connected to the transmission by cables.

Improved types of overdrives will appear on a number of new models, optional at nominal extra cost. One type is referred to as a "climb and pass" gear arrangement, and is designed so that a quick movement of the accelerator pedal will change the gear ratio to provide rapid acceleration when on a hill or passing another car.

Gadgetry. Each year sees a number of novelties or gadgets introduced on new cars to improve comfort, ease of operation or appearance. One idea adopted this year involves a new type of cowl ventilator which, when opened, permits ready passage of air but prevents rain or snow from blowing in on the feet of the occupants of the front seat. In tests, buckets of water were dashed against the open ventilator, but not a drop reached the car interior, according to observers.

Another innovation is a speedometer needle tipped with a small gem which, through an arrangement of lights and filters, reflects green in the range of 0-30 miles per hour, amber in the 30-50 mile range, and red thereafter. Thus it indicates at a glance to night drivers the speed range in which they are traveling.

Expect Strong Market

Yet to be evolved by nimble automotive engineering brains is the automatic device for folding and unfolding roadmaps!

Here, then, are a few of the things to look for at the coming automobile shows, and advance indications are that large throngs will be ganging up on the auto shows this fall, with most in a buying mood. Many persons here consider Mr. K. T. Keller's estimate of 3,500,000 cars and trucks for the 1939 model year on the low side rather than the top estimate for production.

■ THE GUESSERS are busy already naming the new 116-inch wheelbase Ford which will be fitted into this company's deluxe line for lext year. They reason that since the Zephyr name has proved so popular, some similar name will be applied to the deluxe Ford to capture the public's fancy. It is considered a good possibility the new car will be called the Ford Mercury, but don't bet on it.

It is said the job will fall in a price class about $100 above the present 85-horsepower deluxe line which next year will be the standard series. The new model will have horsepower stepped up to about 100 by increasing the cylinder bore on the order of 1/16-inch.

Reports are current Hupp will return to the automotive picture in the fall, having arranged for additional financing and for two new series of models, smaller than the six and eight which were produced in limited numbers last fall. The new models, a six and a four-cylin-

(*Please turn to Page* 81)

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1936	1937	1938
Jan.	377,244	399,186	227,744
Feb.	300,810	383,900	202,872
March	438,943	519,022	238,753
April	527,625	553,231	238,133
May	480,518	540,377	210,183
June	469,368	521,153	189,399
July	451,206	456,909	†150,444
7 mos.	3,045,714	3,373,778	1,456,476
Aug.	275,934	405,072	*85,000
Sept.	139,820	175,630	.....
Oct.	230,049	337,979	.....
Nov.	405,799	376,629	.....
Dec.	518,958	346,886	.....
Year	4,616,274	5,015,974	.....

*Estimated. †Revised.
Estimated by *Ward's Reports.*

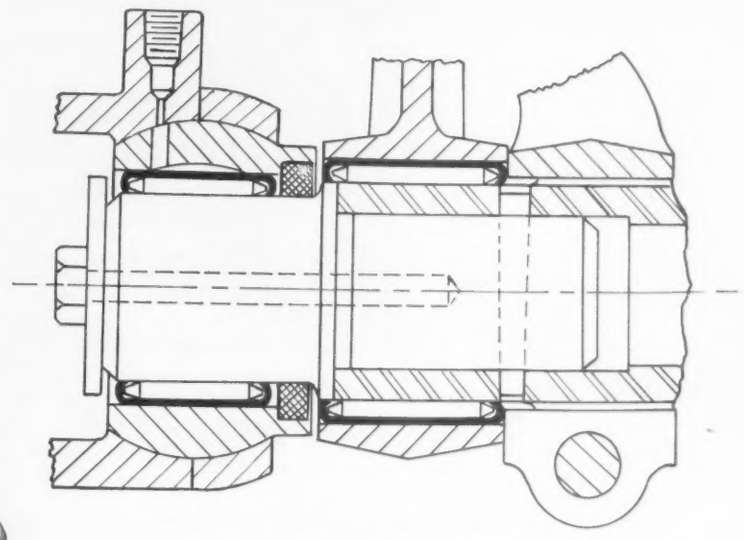
Week ended

July 30	30,390
Aug 6	14,771
Aug. 13	13,790
Aug. 20	23,940
Aug. 27	18,700

	Week ended Aug. 27	Aug. 20
General Motors	500	10,300
Chrysler	1,950	900
Ford	14,000	11,000
All others	2,250	1,740

TORRINGTON NEEDLE BEARING

DESIGN AND SERVICE FEATURES



BRAKE CROSS SHAFT—A TYPICAL AUTOMOTIVE APPLICATION IN WHICH THE TORRINGTON NEEDLE BEARING CAN BE QUICKLY ASSEMBLED.

UNIT CONSTRUCTION SPEEDS ASSEMBLY PROCESS

Ideal for Line Production Methods

THE UNIT CONSTRUCTION of the Torrington Needle Bearing greatly simplifies the process of installation, and makes the bearing ideally suitable for use with assembly-line production methods. Typical of the mechanisms in which the bearing is easily mounted is the brake cross shaft illustrated.

The shape of the bearing also aids in speeding the assembly process by permitting simplification of the housing design. Having a small diameter in proportion to its length, the bearing can be mounted in the simplest type of housing, requiring only a bore of the correct diameter.

High Unit Capacity

The high radial load capacity of the Needle Bearing permits its use for severe loads in either rotating or oscillating applications. Small sizes can be used for heavy duty, with a corresponding reduction in housing weight and size.

The needles are constantly lubricated by the ample supply of grease or oil held by the turned-in lips of the hardened retaining shell. Little service attention is needed, as the supply of lubricant is usually sufficient for long periods.

Low Cost Factors

Low unit cost of the Torrington Needle Bearing and the economies which it offers in assembly place the cost of *complete anti-friction construction* for many types of application on a cost basis comparable to the use of ordinary friction bearings.

Manufacturers wishing to investigate these advantages are invited to profit by the experience of the Torrington Engineering Department in laying out applications. Further information is given in the Torrington Needle Bearing Catalog, available on request. Write for Catalog No. 10.

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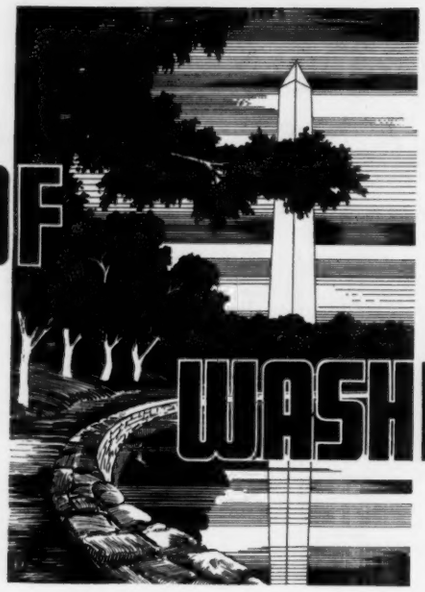
Makers of Ball and Needle Bearings

Branch Offices in all Principal Cities

TORRINGTON
NEEDLE BEARING

WINDOWS OF WASHINGTON



WASHINGTON

■ RECOVERY of foreign markets for American farm products depends largely on what happens to three major agricultural items, according to a special report issued last week by the agricultural committee, National Association of Manufacturers.

Shrinkage in exports of grains, meat and cotton account for over 85 per cent of the decrease in United States agricultural exports since 1926-27. "Therefore," the committee states, "unless reciprocal trade agreements can increase exports in these three fields, in each of which a special condition prevails, it is difficult to see how they can materially increase our total farm exports.

"Ten years ago agricultural exports were valued at $1,907,780,000 and formed over 16 per cent of the total gross farm income. In the crop year 1936-37, agricultural exports had shrunk to $732,826,000 and formed only about 7½ per cent of total farm income.

"Part of this decrease of $1,200,000,000 was due to the fact that prices for all goods were much lower in 1936-37 than in 1926-27. But of most importance is the fact that $1,018,647,000, or approximately 87 per cent of this decrease was accounted for by cotton, wheat and meat."

ROPER PRAISES CO-OPERATION OF BUILDING INDUSTRY

The building industry is giving splendid co-operation to the bureau of standards in its research program on building materials and structures, with special reference to low-cost housing, Secretary of Commerce Roper said last week.

The steel industry has been much interested in the study, being made on a $250,000 appropriation.

Mr. Roper said that partly as the result of work being done by the bureau important progress has been made on the protection of steel by

BY L. M. LAMM

Washington Editor, STEEL

means of paint. More than 20 groups sponsoring new types of construction have made definite arrangements for furnishing specimens for the bureau's study of the structural properties of new construction.

MARITIME COMMISSION TO FORGET OCEAN-LAKE FLEET

Indications are the United States maritime commission has given up the idea of establishing an ocean-going fleet on the Great Lakes.

There are many reasons for this decision, not the least of which is that midwestern shippers have not asked for such a service and it is assumed the shippers are satisfied with contracts offered by Atlantic carriers. It is said also Norwegian ships which now use the lake route can operate much cheaper than could American boats.

D. W. SMITH REAPPOINTED TO LABOR RELATIONS BOARD

President Roosevelt late last week reappointed Donald W. Smith a member of the national labor relations board for a 5-year term. Appointment was made over protest of the American Federation of Labor although the Committee for Industrial Organization favored Smith.

As this is a recess appointment subject to senate ratification, it is reported here the AFL will fight confirmation when congress convenes.

PROPOSES SPECIFIC CHANGES IN LABOR RELATIONS ACT

Specific recommendations for changes in the labor relations act were made last week by the United States chamber of commerce.

"The labor relations act and its administration," said George H. Davis, president of the national chamber, "exert influences working strongly against economic recovery. Proceedings of the labor board have not been fair and impartial and there has been ample demonstration of the fact that the legislation has not fulfilled its stated purpose of lessening industrial disputes."

Amendments proposed: To make explicit that an employer is not obliged to bargain with a labor organization except as the representative of those of his employes who are members of the organization and who have expressly designated it to speak for them in collective negotiations.

To make explicit that an employer is not obliged to continue to bargain collectively with a labor organization when the real issue in controversy is a demand for the checkoff or for a closed-shop agreement.

To make illegal any action by a majority to deprive a minority of any of its rights, such as through efforts to obtain the checkoff or closed shop.

To require the board to receive and consider employers' petitions for investigation as to the membership status of rival labor organizations seeking recognition.

GREEN TELLS PRESIDENT LABOR BOARD'S FAILINGS

President Roosevelt at last apparently has been convinced some changes must be made in administration of the Wagner act. At least, that is AFL President William Green's story after a conference with the Chief Executive.

The federation has complained for months to members of congress and the White House about some of the labor board's rulings. Now, apparently, Mr. Roosevelt has admitted some changes are necessary in the

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Skilled hands are matched by machines equally facile in their adaptability to the amazing twists and turns in spring manufacture. Just what this means to you as a user of springs may best be expressed in terms of:

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DELIVERY

All three considered, you'll find that Barnes-made Springs are the economical buy.

Springs

THE WALLACE BARNES CO.

DIVISION OF ASSOCIATED SPRING CORPORATION

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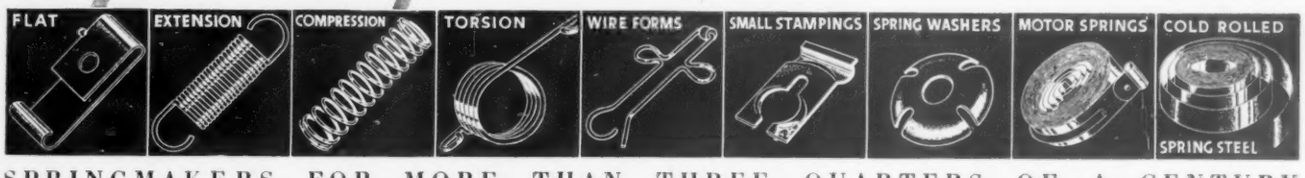


SPRINGMAKERS FOR MORE THAN THREE QUARTERS OF A CENTURY

act. What the changes might be has not been determined.

The board and its members have been in hot water much of the time. It has been under fire from many sides, including the courts. Chief complaint of the AFL is the board has been playing the game of John L. Lewis' CIO, and has discriminated against AFL in favor of the Lewis organization.

In his conference with Mr. Roosevelt, Green said he discussed the board's administration. He stated the federation is not censuring the law but the attitude of the board. He told the President of specific cases which the board had handled in a manner in conflict with the letter and spirit of the law.

CONTRACTS BOARD TO MAKE WAGE REPORT SOON

Time was up last week for filing briefs and additional information by the steel industry with the public contracts board of the labor department on wage scales for the Walsh-Healey act.

Thomas Holland, board chairman, said few final briefs were filed. He believes it should take not more than two weeks to complete recommendations for wages to be submitted to the secretary of labor. And it is then up to Miss Perkins to decide whether she will accept the recommendations, or ask for a resurvey. No official will even guess as to what the board's recommendation will be or what it will do relative to differentials about which so much was said at the hearings early in August.

Following the hearing the board sent out a second questionnaire to small mills asking for additional information. Mr. Holland announced 80 to 100 replies to this second inquiry were received. This information is now being tabulated.

ONE OUT OF SIXTEEN HOLDS GOVERNMENT JOB

While the total number employed in the United States fell 3,340,000 from September, 1937 to 42,955,000 in June this year, federal, state and local government employes increased by 79,000 to 2,590,000, according to the National Industrial Conference board.

Approximately one in every 16 was employed by the government.

Although national employment has varied with business conditions, government employment has risen steadily, since 1929. In June, when national figures showed 4,930,000 fewer workers than in 1929, government employes numbered 2,590,000, or 25.1 per cent more than in 1929.

This trend is most pronounced in the federal government. Regular federal employes, excluding emergency WPA and CCC workers, increased each year since 1929. The most rapid rise has occurred since 1934, when the number was 928,000. The 1,194,000 total of regular federal employes in June, 1938, was 43.3 per cent over 1929.

ROPER TERMS DISTRIBUTION KEY LOG IN ECONOMIC JAM

The country's distribution system, as well as the system of production, must be purged of uneconomic and wasteful practices and function at less cost, Secretary of Commerce Roper said last week. He described distribution, as the key log in the economic jam.

"The modernization of policies will seek a more uniform but less spectacular rate of profit," he said, "for those engaged in production and distribution, to the end that people generally may enjoy more of the fruits of sustained mass production efficiency . . . .

"It is admitted that many of the situations affecting the proper operation of our system of distribution are traceable to monopolistic practices. A fact-finding investigation now under way will, we hope, point the way to effective remedies in the interest of all of our citizens. With the economy of the nation complicated by the growth of great corporations into vast economic states, the power of the congress to secure competitive selling and prevent unreasonable profits is the public's safeguard against abuses."

BOARD TAKES INLAND CASE UNDER ADVISEMENT

National labor relations board took under advisement last week its case against Inland Steel Co. in which the company disputed power of the board to compel it to sign a contract with its employes.

Inland had been ordered by the board to sign a contract with the SWOC. Because of the decision of the United States Supreme Court in the Chicago stock yards case the board withdrew its order. The case was reopened on a different basis considered by board counsel to be more in accordance with the court decision. The board now is ready for another decision.

TRUST BUSTER ARNOLD TAKES TO THE STUMP

Thurman Arnold, assistant attorney general in charge of the anti-trust division of the department of justice, is developing into one of the New Deal's most ardent speechmakers. He is driving toward some change in the Sherman law as soon as possible, although such change is not likely before 1940 as congress is not going to amend the law until it receives a report from the national economic committee.

Last week Arnold said "the question before the American people is whether they want to save their competitive system. If so, it will not be done by attacking the morals of business men who have been thrown into a 'free for all' fight without enough referees present at the battles. It will be done only if an enforcement organization is built up, with regional offices and a personnel sufficient to investigate and prosecute all violations instead of some of them."

Arnold thinks his division should be enlarged to take care of his compaign.

REPORT JAPAN WILL TRY TO REGAIN LOST MARKETS

American commercial attache at Tokyo informs the commerce department that Japanese steel manufacturers reportedly will undertake an extensive campaign in an effort to regain foreign iron and steel markets lost since outbreak of the Far Eastern difficulties. The reports indicate these manufacturers may accept lower prices for export orders than those quoted for domestic orders.

BRITISH TRADE AGREEMENT NEGOTIATIONS PROGRESS

Speculation about the new trade agreement with the United Kingdom and renewal of the one with Canada is rife.

Several weeks ago stories in Washington indicated the new British trade agreement might fail. However, these were discounted on the ground Secretary of State Hull could not afford to lose in this venture. There is too much at stake, politically and economically.

Latest and best information available here is that a preliminary draft of the proposed pact has been forwarded to London through usual diplomatic channels and is now being studied. Guesses by those "in the know" are the agreement probably will be made public early in October.

RFC MAKES LOANS TO METALWORKING COMPANIES

During July the reconstruction finance corporation made many loans to industrial establishments. Included were: Steel Products Co., Iola, Kans., $25,000; Lofland Machine & Foundry Co., Wichita, Kans., $8000; McLouth Steel Corp., Detroit, $250,000; Safway Steel Scaffolds, Inc., Detroit, $12,000; Steel Materials Corp., Detroit, $100,000; Steel Treating Equipment Co., $13,000; North Western Metal Mfg. Co., Minneapolis, $14,000; A. P. Williams Iron Co. Inc., New York, $15,000; and Pittsburgh Steel Foundry Corp., Pittsburgh, $250,000. In none of these cases had actual cash been paid out by the RFC at the end of July.

Forty-Six Steel Leaders Named To Welcome British Industrialists

■ FORTY-SIX leaders of the American steel industry will serve on local committees which will welcome to principal steel producing cities in October a group of nearly 300 prominent British industrialists, engineers and metallurgists. Personnel of these committees was announced last week by the American Iron and Steel institute.

The visiting group—members of the Iron and Steel institute and Institute of Metals, both of Great Britain—is coming to the United States at the invitation of the American Iron and Steel institute and American Institute of Mining and Metallurgical Engineers. The visitors will make an extensive tour of iron and steel plants and nonferrous metal works after holding a joint meeting in New York with the two American institutes, Oct. 3-4. Program for the meeting and the complete itinerary for the tours were presented in STEEL, Aug. 15, p. 15.

Hotel Waldorf-Astoria will be headquarters for the visitors while in New York, Oct. 3-5. The meeting will open with a session at the Engineering Societies building on the afternoon of Oct. 3, this to be followed with a reception and banquet at the Waldorf-Astoria. Second technical session will be at the hotel, the morning of Oct. 4.

Oct. 6-8 will be spent in Washington, with the Mayflower hotel as headquarters. The banquet will be served on the evening of Oct. 8. Hotel Schenley and clubs in the Schenley Park district will be headquarters for the group in Pittsburgh, Oct. 10-12. The banquet will be at the William Penn hotel, Oct. 11.

Youngstown will be host to the group Oct. 13, and Cleveland, Oct. 14-15, with Hotel Cleveland as headquarters. A banquet is arranged for Oct. 14 at the Union club.

To Attend Metal Exposition

Three days, Oct. 16-18, will be spent in Detroit, the Detroit-Leland hotel as headquarters. In that city, the visitors will attend the National Metal exposition, sponsored by the American Society for Metals. The program also calls for presentation of the autumn lecture of the British Institute of Metals at the Book-Cadillac hotel, Oct. 17, and attendance at the banquet of the American Institute of Mining and Metallurgical Engineers at the same hotel, Oct. 18.

One group will return to New York, spending Oct. 19 in Buffalo, with headquarters at the General Brock hotel, Niagara Falls, Ont. Another group will go to Chicago for the period Oct. 20-25, establishing headquarters at the Stevens hotel. A banquet at the Palmer House will be tendered the visitors on Oct. 20.

W. A. Irvin, vice chairman, United States Steel Corp., is chairman of the committee in charge of arrangements in New York. Other members of this committee are E. R. Stettinius and B. F. Fairless, chairman and president of the same corporation, respectively; T. M. Girdler, chairman, Republic Steel Corp., Cleveland, and president, American Iron and Steel institute; C. M. Schwab and E. G. Grace, respectively chairman and president, Bethlehem Steel Corp., Bethlehem, Pa.; F. B. Hufnagel, chairman, Crucible Steel Co. of America, New York; Arthur Roeder, president, Colorado Fuel & Iron Corp., Denver, Colo.; E. T. Weir, chairman, National Steel Corp., Pittsburgh; and C. R. Hook, president, American Rolling Mill Co., Middletown, O.

The Pittsburgh committee will be headed by Mr. Fairless as chairman. Other members are W. F. Detwiler, chairman, Allegheny-Ludlum Steel Corp., Brackenridge, Pa.; F. R. Frost, president, Superior Steel Corp., Pittsburgh; B. F. Harris, president, National Tube Co., Pittsburgh; W. W. Holloway, president, Wheeling Steel Corp., Wheeling, W. Va.; W. F. Ingals, president, Central Tube Co., Pittsburgh; H. E. Lewis, chairman, Jones & Laughlin Steel Corp., Pittsburgh; T. E. Millsop, president, Weirton Steel Co., Weirton, W. Va.; E. L. Parker, president, Columbia Steel & Shafting Co., Pittsburgh; J. L. Perry, president, Carnegie-Illinois Steel Corp., Pittsburgh; L. F. Rains, president, A. M. Byers Co., Pittsburgh; and H. A. Roemer, president, Sharon Steel Corp., Sharon, Pa.

Cleveland-Youngstown Hosts

Cleveland-Youngstown committee personnel: H. G. Dalton, chairman, Youngstown Sheet & Tube Co., Cleveland, as chairman; Mr. Girdler; C. F. Hood, president, American Steel & Wire Co., Cleveland; Elton Hoyt II, partner, Pickands-Mather & Co., Cleveland; G. M. Humphrey, chairman of executive committee, National Steel Corp., Cleveland; E. J. Kulas, president, Otis Steel Co., Cleveland; Frank Purnell, president, Youngstown Sheet & Tube Co., Youngstown; H. H. Timken, chairman, Timken Roller Bearing Co., Canton, O.; and R. J. Wysor, president, Republic Steel Corp.

George R. Fink, president, Great

Modern Note in Laying Cornerstones

■ **In laying the cornerstone for the $800,000 addition to Ellis hospital, Schenectady, N. Y., recently, E. W. Allen, vice president, General Electric Co., (the man behind the mask) welded a strongbox containing records and sound film of the ceremonies, securely into the stone. Previously, heavy girders for the addition were "sewn" together by electric welding, while a sound meter ten feet away, within the hospital, showed less noise was made in the "operation" than by normal conversation at equal distance**

Lakes Steel Corp., Detroit, is chairman of the Detroit committee. Other members are: A. J. Bopp, president, Bopp Steel Corp.; C. P. Craine and W. C. Schrage, president and secretary-treasurer, respectively, Craine-Schrage Steel Co.; D. B. McLouth, president, McLouth Steel Corp.; and H. M. Naugle, president, Rotary Electric Steel Co., all of Detroit.

Chicago Committee

Chairman of the Chicago committee is L. E. Block, chairman, Inland Steel Co., Chicago. Serving with him are E. L. Ryerson Jr., vice chairman, and P. D. Block, president of the same company; C. D. Caldwell, president, Interlake Iron Corp., Chicago; A. T. Clarage, president, Columbia Tool Steel Co., Chicago Heights, Ill.; W. E. Hadley, manager of operations, Chicago district; W. I. Howland Jr., vice president, in charge of sales, and G. C. Kimball, executive vice president, all of the Carnegie-Illinois Steel Corp., Chicago; Hayward Niedringhaus, president, Granite City Steel Co., Granite City, Ill.; R. H. Norton, president, Acme Steel Co., Chicago; G. E. Rose, vice president in charge of iron and coal mines and Wisconsin Steel Works, International Harvester Co., Chicago.

U. S. IMPORTS FOR CONSUMPTION OF IRON AND STEEL PRODUCTS

Gross Tons

Articles	July, 1938	June, 1938	Jan. thru July, '38
Pig iron	936	900	21,301
Sponge iron	5	1	323
Ferromanganese (1)	1,309	793	6,378
Spiegeleisen	203	212	5,027
Ferrochrome (2)	28	34	99
Ferrosilicon (3)	37	27	315
Other ferroalloys (4)	.....	.....	1
Steel ingots blooms, etc.	3	.....	7
Billets	1	32	378
Concrete reinforc. bars	89	52	662
Hollow bar, drill steel	47	9	476
Bars, solid or hollow	884	2,043	11,382
Iron slabs	.....	.....	.....
Iron bars	24	27	335
Wire rods	278	327	2,798
Boiler and other plate	10	.....	120
Sheets, skelp, saw plate	110	381	5,285
Die blocks or blanks	2	29	66
Tin plate, taggers' tin and terne plate	25	3	55
Structural shapes	2,507	3,599	24,454
Sashes and frames	.....	.....	.....
Sheet piling	.....	.....	.....
Rails and fastenings	231	84	1,983
Cast iron pipe, fittings	22	18	898
Malleable iron pipe fitgs.	5	.....	42
Welded pipe	355	622	2,791
Other pipe	887	1,930	13,651
Cotton ties	3,085	222	3,331
Other hoops, bands	1,040	1,806	10,729
Barbed wire	692	866	8,518
Round iron, steel wire	107	49	684
Telegraph, telephone wire	.....	.....	5
Flat wire and steel strips	168	154	1,518
Wire rope and strand	99	178	1,218
Other wire	97	160	919
Nails, tacks and staples	626	543	4,097
Bolts, nuts and rivets	12	21	93
Horse and mule shoes	33	68	248
Castings and forgings	137	383	1,722
Total	14,094	15,573	131,909
Iron and steel scrap	634	314	1,804
GRAND TOTAL	14,728	15,887	133,713

(1) Manganese content; (2) chrome content; (3) silicon content; (4) alloy content.

Moderate Drop In July Exports

■ IRON and steel exports, excluding scrap, in July totaled 137,276 gross tons, valued at $9,832,897, compared with 149,955 tons valued at $10,799,161 in June, and 464,175 tons valued at $26.585,260 in July, 1937.

This was a decline of 8.4 per cent in volume and 10.8 per cent in value from June.

Steel ingot shipments led in July tonnage, 17,882 gross tons, comparing with 10,571 tons in June, and 49,072 tons in July, 1937. Japan took 13,518 tons and Spain 3904. Steel plates were second, amounting to 17,390 tons, against 14,140 tons in June, and 50,406 tons in July last year. These were widely distributed to Kwantung, Sweden, the Netherlands, Japan and Canada.

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1938		1937	
	Exports	Imports	Exports	Imports
Jan.	586,294	29,631	201,692	43,063
Feb.	460,640	19,589	290,987	40,728
March	526,883	11,827	570,584	51,805
April	489,202	21,237	683,674	68,197
May	540,639	20,814	969,222	49,050
June	312,021	15,887	826,534	44,771
July	263,699	14,728	889,438	47,012
7 mo.	3.179,378	133,713	4,432,153	344,626
Aug.	.....	.....	836,319	61,489
Sept.	.....	.....	543,740	37,071
Oct.	.....	.....	522,611	37,186
Nov.	.....	.....	556,591	26,996
Dec.	.....	.....	626,418	25,792
Total	.....	.....	7,567,884	533,160

Black steel sheet exports in July totaled 14,730 tons, Canada taking 2854 tons, Soviet Union 2742, United Kingdom 1941, Australia 1184, and Mexico 1127 tons. Tin plate ranked fourth with 12,802 tons. Canada also took the largest total in this product, 2755 tons, the remainder being widely distributed. Of 10,371 tons of pig iron exported Japan took 8201 tons.

Cumulative exports for seven months this year, excluding scrap, totaled 1,254,642 tons, valued at $85,186,955, compared with 1,834,750 tons valued at $112,590,084 in the first seven months of 1937. The January-July total exceeded the 1,221,209 tons exported in the entire year 1936.

Scrap exports in July were 126,423 tons, valued at $1,667,487, against 162,066 tons valued at $2,231,681 in June, and 425,303 tons valued at $8,834,079 in July, 1937. Scrap exports for seven months totaled 1,924,736 tons valued at $30,283,531, compared with 2,597,403 tons valued at $51,844,204 in seven months last year. This is a decline of 31.6 per cent in volume and 24 per cent in value.

Imports of steel and iron in July amounted to 14,728 tons, including 634 tons of scrap, compared with 15,887 tons in June, including 314 tons of scrap. Most classifications showed little change in volume. Ferromanganese increased from 793 tons in June to 1309 tons in July, and cotton ties from 222 tons to 3085 tons. Hoops and bands declined from 1806 tons in June to 1040 tons in July; bars from 2043 tons to 884 tons, sheets and skelp from 381 tons to 110 tons; structural shapes from 3599 tons to 2507 tons, and pipe from 1930 tons to 887 tons.

POWER METALWORKING MACHINERY EXPORTS GAIN

Exports of industrial machinery from the United States in July were valued at $20,948,548, a 7 per cent decline from $22,436,301 in July, 1937, according to the machinery division, department of commerce. Shipments were reduced in all major groups except in power-driven metalworking machinery, which increased 39 per cent; and mining, well and pumping equipment, up 7 per cent.

Power-driven metalworking machinery exports were valued at $6,488,415, compared with $4,665,741 in July, 1937. Lathes, milling machines, gear cutters, drilling machines, except vertical and radial, planers and shapers, external cylindrical grinding machines and sheet and plate metalworking machines showed marked gains.

Exports of metalworking machinery other than power-driven, were 22 per cent lower than a year ago, $338,223, compared with $439,351.

(*Please turn to Page* 81)

ORIGIN OF JULY IMPORTS

Gross Tons

	Iron ore	Pig iron	Manganese ore	Ferromanganese
Sweden	53,677	.....	.....	.....
Brazil	2,800	.....	3,545	.....
United Kingdom	20	.....	.....	.....
Canada	120	187	.....	.....
Australia	5,003	.....	.....	.....
Chile	144,050	.....	.....	.....
Netherlands	.....	250	.....	279
British India	.....	499	2,145	.....
Soviet Russia	.....	.....	7,720	.....
Cuba	.....	.....	2,890	.....
Gold Coast	.....	.....	5,048	.....
China	.....	.....	1	.....
France	.....	.....	.....	84
Norway	.....	.....	.....	616
Japan	.....	.....	.....	53
Czechoslovakia	.....	.....	.....	277
Total	205,670	936	21,349	1,309

	Sheets, skelp and sawplate	Structural steel	Steel bars	Hoops and bands
Belgium	90	2,155	432	1,139
Germany	1	28	129	2,941
Sweden	4	.....	133	.....
United Kingdom	7	70	30	.....
Canada	8	.....	.....	.....
France	.....	254	159	39
Czechoslovakia	.....	.....	1	.....
Total	110	2,507	884	4,119

MEN OF INDUSTRY

■ L. C. BIBBER, Carnegie-Illinois Steel Corp., has been elected chairman of the Pittsburgh section, American Welding society. Other newly elected officers are: Vice chairman, George F. Wolfe, Dravo Corp.; secretary, J. F. Minnotte, Minnotte Bros Co.; executive committee, A. E. Marble, Jones & Laughlin Steel Corp.; W. R. Persons, Lincoln Electric Co.; S. D. Edsall, Air Reduction Sales Co.; R. B. Lincoln, Pittsburgh Testing Laboratory; C. E. Loos, American Bridge Co., and Milton Male, United States Steel Corp.

♦

J. H. Riddle, for 23 years associated with the Milcor Steel Co., Milwaukee, during which time he has

J. H. Riddle

traveled extensively for the company and has taken an important part in the development and promotion of many Milcor products, has been appointed manager of the new warehouse to be opened in Rochester, N. Y., Sept. 1.

♦

G. E. Daub, who has been engaged in the scale business in the South the past 20 years, has been placed in charge of the new branch recently established in Atlanta, Ga., by the Buffalo Scale Co. Inc., Buffalo.

♦

S. L. Davis, of Chicago, has been elected president, Hupp Motor Car Corp., Detroit, succeeding Thomas Bradley, resigned. Norman deVaux has been named general manager in charge of operations, and a director.

♦

Frank D. Newbury has been named manager, new products division, Westinghouse Electric & Mfg. Co., succeeding the late Herbert M. Wilcox. He will also continue his present duties as economist for the company.

♦

Harold A. Guthans, formerly marine superintendent in the water transportation department, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., has been promoted to general superintendent of that department, his headquarters continuing in Mobile, Ala.

♦

Edward H. Markham, formerly major general of the United States army and from 1933 to 1937 chief of engineers of the army, has been elected president, Great Lakes Dredge & Dock Co., Chicago. Since March 1, 1938, he served as New York city commissioner of public works.

♦

Harry E. Slocum, chief chemist, Pittsburgh works, Jones & Laughlin Steel Corp., Pittsburgh, has been named director of laboratories at Aliquippa works. These laboratories were formerly under the direction of the Aliquippa metallurgical department. Mr. Slocum also will continue with his former duties.

♦

Roland B. Snow has become a research engineer at Battelle Memorial institute, Columbus, O., and has been assigned to work on ceramics. The past two years he has been petrographer on the research staff of Carnegie-Illinois Steel Corp., South Chicago, Ill.

♦

William N. Goggin, of Goggin & Goggin Co., Chicago, has been appointed sales representative in the Chicago district for the Salem Engineering Co., Salem, O., maker of industrial heating equipment. The Salem company has also appointed F. R. Wilson, Birmingham, Mich., as its sales representative in the Detroit district.

♦

Kenneth H. Condit has been appointed executive assistant to Dr. Virgil Jordan, president, National Industrial Conference board, New York. Mr. Condit has been editor of *American Machinist* for more than 17 years, and was the editor of *Product Engineering*, publications of McGraw-Hill Publishing Co. He retains a connection as consulting editor of both papers.

♦

J. C. Barnaby, former manager of Worthington Pump & Machinery Corp.'s oil and gas engine application division at Buffalo, and responsible for engine sales in the Central division, has been placed in charge of special engineering work pertaining to research and design.

W. E. Wechter, in charge of engine sales at New York, in the Atlantic division, has been transferred to Buffalo to succeed Mr. Barnaby. He will be assisted by J. F. Hecking, who continues as assistant manager, oil and gas engine application division.

In the Atlantic division, oil engine sales will be handled by H. C. Wood at New York, while W. L. Russell, Harrison, N. J., will take over gas engine sales, in addition to his duties as manager, eastern division of Worthington oil and gas power sales.

DIED:

■ JOSEPH H. FRANTZ, 74, vice chairman of the board, American Rolling Mill Co., Middletown, O., at

Joseph H. Frantz

his home in Columbus, O., Aug. 19. He retired from active business several years ago because of ill health. He was associated for many years with the late Col. J. G. Battelle first as secretary of the Cincinnati Corrugating Co., in succession to Colonel Battelle; and also of the Piqua Rolling Mill Co., Piqua, O., of which Colonel Battelle was president and general manager. When these companies were absorbed by American Sheet Steel Co. and later went into the American Sheet & Tin Plate Co., Mr. Frantz remained with the latter, in charge of Ohio sheet mills. Shortly after the organization of Columbus Iron & Steel Co., Columbus, O., in 1900, with Colonel Battelle as president, Mr. Frantz joined the company as vice president and general manager, and in 1917 when it was acquired by American Rolling Mill Co., he remained as first vice president. Mr. Frantz was active in negotiations which brought the Ashland Iron & Mining Co.'s properties into the

American Rolling Mill Co. He was also president, Battelle Memorial institute, Columbus; a director, Columbia Transportation Co., and a member, American Iron and Steel institute and American Institute of Mining and Metallurgical Engineers.

♦

Emery L. Garman, 71, president, Garman Tool & Die Co., Detroit, in an automobile accident at Estherville, Iowa, Aug. 17.

♦

Biddle Arthurs, 72, who until his retirement two years ago was president, Simonds Gear & Mfg. Co., Pittsburgh, in that city, recently.

♦

Anthony Carlin, 81, president and treasurer, Anthony Carlin Co., Cleveland, rivet manufacturer, in Cleveland, Aug. 20.

♦

Fred Buck, 80, president and general manager, Lufkin Rule Co., Saginaw, Mich., and president of Lufkin Rule Co. of Canada Ltd., Windsor, Ont., in Saginaw, recently.

♦

Glendon C. Brown, 31, for the past decade an electrical engineer with Cutler-Hammer Inc., Milwaukee, in Milwaukee, Aug. 10. He was a member, American Institute of Electrical Engineers.

♦

Edward S. Tobin, 63, president and owner, Cream City Smelting Co., Milwaukee, in that city, Aug. 16. He became superintendent of the factory in 1896 and acquired ownership in 1921.

♦

Carroll R. Slensby, 41, representative in Wisconsin for General Alloys Corp., Boston; Chandler Products Co., Cleveland, and National Rivet & Mfg. Co., Waupun, Wis., in Milwaukee, Aug. 16.

♦

P. B. Abramsen, 59, inventor of the straightening machine which formerly bore his name, Aug. 19 in Pittsburgh. A mechanical engineer, Mr. Abramsen was well known in metalworking circles.

♦

Perry L. Tenney, 55, sales engineer, diesel division, General Motors Corp., at his home in East Lansing, Mich., Aug. 22. He went to East Lansing seven years ago from Muncie, Ind., where he had been chief engineer for the Muncie Products Co.

♦

Fred A. Miller, 70, honorary board chairman, S. R. Dresser Mfg. Co., Bradford, Pa., manufacturer of pipe couplings for gas lines, at his home in Bradford, Aug. 22. Joining the Dresser company Jan. 1, 1903, Mr. Miller successively became secretary-treasurer, in 1911 was made president, and in 1929, chairman of the board. He resigned from that position May 27, 1938, and later was named honorary chairman. Mr. Miller took a prominent part in the growth of the natural gas industry and at one time was president, National Gas Supply Men's association and later a director, American Gas association.

♦

C. A. Van Dusen, president, Van Dusen Auto Repair & Machine Co., Toledo, O., in that city, recently. Mr. Van Dusen was associated with the hoist and body division of Gar Wood Industries Inc. for many years, being one of the first distributors for the old Wood Hydraulic Hoist & Body Co., former name of Gar Wood Industries.

Steel's 6-Months Tax $46,000,000

■ TAXES amounting to nearly $46,000,000 were paid by steel companies to federal, state and local governments during the first six months this year, the American Iron and Steel institute computes from reports furnished by companies producing over 90 per cent of total output.

In the same period these companies piled up deficits aggregating $18,400,000. This represented a loss of about 0.1 per cent on investment, as against the 6.2 return on investment for the year 1937. Since 1933 the average return on steel company investment has been 2.2 per cent.

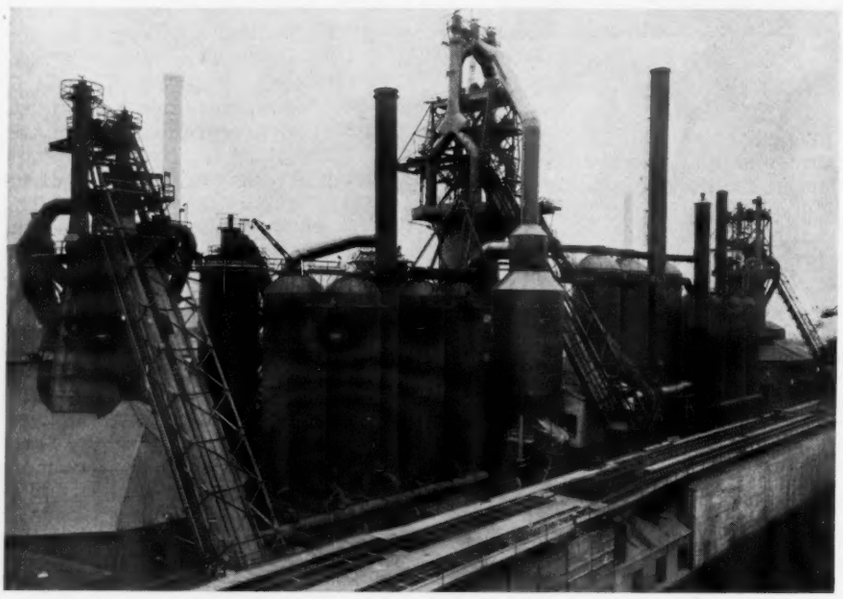
For every ton of steel, wrought iron and merchant pig iron shipped in the first half the average loss was $1.75. This compares with a profit of $5.70 per ton, before dividends, for 1937, when output was third largest in history.

Taxes per ton of products shipped rose 18 per cent over 1937, amounting to $4.90 against $4.15 last year. Although the deficits incurred resulted in drastic reduction in the aggregate amount of federal income, surplus and excess profits taxes paid, this was offset by increased social security tax rates and by sharply reduced volume of output. The $46,000,000 paid as taxes is equivalent to a full month's pay for 327,000 employes.

Total payrolls of $340,702,000, including those of certain subsidiaries not producing iron or steel, were disbursed by the companies during the first half to nearly 504,000 employes.

Dividends totaling $25,562,000 were paid to the companies' half-million stockholders during the same period. Payments represented 7½-cents for each dollar of payrolls, while in 1937 dividends were 13½-cents per payroll dollar.

New Features in Detroit Blast Furnace



■ **New "C" furnace of the Hanna Furnace Corp., National Steel Corp. subsidiary, Zug Island plant, Delray, Mich. The 1000-ton stack designed and built by Arthur G. McKee & Co. was blown in Aug. 16. Arrangement and features of this unit, dictated mainly by space limitations, are unique. The furnace has three high-heat capacity stoves, balanced offtakes with single downcomer and a complete complement of gas-cleaning facilities, including an electric precipitator for final gas cleaning**

First Half Pig Iron Output Off 60 Per Cent

■PIG IRON production in the first half, 1938, was 60 per cent lower than in the corresponding period of 1937. Ferroalloy output was down 34 per cent. The pig iron total, 7,778,964 gross tons, was the smallest for the first half in postwar years, with the exception of 1932 with 5,164,520 tons, and 1933 with 4,444,750 tons.

Pennsylvania continued to lead with 2,122,809 tons; Ohio was second with 1,601,474 tons.

Pig iron made for maker's use declined 61 per cent from the first half of 1937; that made for sale was 51 per cent less.

Of the 325,057 gross tons of ferroalloys made in the first half, 128,369 tons were from electric furnaces, the remainder from blast furnaces. Accompanying tables were compiled by American Iron and Steel institute.

HALF-YEARLY PRODUCTION OF PIG IRON AND FERRO-ALLOYS BY STATES

States	Blast furnaces (a)				Production		
	In blast Dec. 31, 1937	June 30, 1938					
		In	Out	Total	First 6 months 1937	Second 6 months 1937	First 6 months 1938
PIG IRON:							
Mass.	0	0	1	1	1,420,179	1,423,107	572,599
New York	7	5	12	17			
Penna.	24	17	56	73	6,453,907	4,917,331	2,122,809
Maryland	3	4	2	6	1,323,105	1,208,352	765,555
West Va.	1	1	2	3			
Kentucky	1	1	1	2			
Tennessee	1	1	2	3			
Alabama	10	6	13	19	1,285,846	1,294,828	870,203
Ohio	18	16	30	46	4,175,367	3,728,577	1,601,474
Illinois	7	4	19	23	1,835,923	1,590,193	708,731
Indiana	7	5	13	18	2,558,190	2,164,126	964,028
Michigan	5	4	4	8			
Minnesota	1	1	1	2	429,485	321,080	173,565
Iowa	0	0	0	0			
Missouri	0	0	1	1			
Colorado	1	1	1	2			
Utah	1	1	0	1			
Total	87	67	158	225	19,482,002	16,647,594	7,778,964
FERRO-ALLOYS:							
New York	1	0	1	1	242,164	229,962	117,987
Penna.	4	3	5	8			
Virginia	0	1	0	1	75,142	83,125	78,701
Tennessee	0	0	2	2			
Alabama	1	0	1	1			
Ohio	2	1	1	2			
Colorado	0	1	0	1			
Blast furnaces	8	6	10	16	317,306	313,087	196,688
Electric furnaces	....	....	....	....	176,192	191,096	128,369
Total	8	6	10	16	493,498	504,183	325,057
Grand total	95	73	168	241	19,975,500	17,151,777	8,104,021

(a) Completed and rebuilding pig iron furnaces.

HALF-YEARLY PRODUCTION OF PIG IRON BY GRADES AND FERRO-ALLOYS BY KINDS

BASIC PIG IRON

States	First 6 months 1937	Second 6 months 1937	First 6 months 1938
Massachusetts, New York	992,655	814,011	312,450
Pennsylvania	4,615,520	3,438,902	1,551,611
Maryland, West Va., Kentucky, Ala.	1,745,559	1,670,135	1,152,985
Ohio	2,484,959	2,293,918	875,588
Indiana, Illinois	3,024,193	2,314,984	997,350
Michigan, Minnesota, Colorado, Utah	677,365	708,588	272,039
Total	13,540,251	11,240,538	5,162,023

BESSEMER AND LOW-PHOSPHORUS PIG IRON

Pennsylvania	1,466,789	1,284,013	487,761
New York, Md., West Va., Ala.	339,359	322,007	145,576
Ohio	1,164,519	907,374	534,173
Indiana, Illinois	475,325	355,996	156,017
Total	3,445,992	2,869,390	1,323,527

FOUNDRY PIG IRON

Massachusetts, New York, Pennsylvania	429,143	536,350	167,625
Maryland, Ky., Tenn., Ala.	575,762	634,664	361,867
Ohio	143,020	84,390	71,627
Ind., Ill., Mich., Minn., Col., Utah	241,479	181,430	147,117
Total	1,389,404	1,436,834	748,236

MALLEABLE PIG IRON

Massachusetts, New York, Pennsylvania	278,479	115,472	138,738
Ohio	377,372	437,467	117,714
Indiana, Illinois, Minnesota	399,447	506,869	270,947
Total	1,055,298	1,059,808	527,399

FERRO-ALLOYS BY KINDS

Ferro-manganese and spiegeleisen	237,335	278,446	154,938
Ferro-silicon	215,437	196,995	150,704
Other ferro-alloys	40,726	28,742	19,415
Total	493,498	504,183	325,057

PRODUCTION OF PIG IRON AND FERRO-ALLOYS IN THE FIRST 6 MONTHS OF 1938

(For Sale and for Maker's Use)

	For sale	For maker's use	Total
PIG IRON:			
Basic	326,829	4,835,194	5,162,023
Bessemer and low-phosphorus	46,223	1,277,304	1,323,527
Foundry	626,523	121,713	748,236
Malleable	490,098	37,301	527,399
Forge or mill	687	....	687
White and mottled, direct castings, etc.	8,697	8,395	17,092
Total	1,499,057	6,279,907	7,778,964
FERRO-ALLOYS:			
Ferro-manganese and spiegeleisen	47,047	107,891	154,938
Ferro-silicon	150,637	67	150,704
Other ferro-alloys	18,892	523	19,415
Total	216,576	108,481	325,057
Grand total	1,715,633	6,388,388	8,104,021

EDITORIAL

Forging More Business Shackles

■ DESPITE assurances that the new national economic committee will act in a spirit of friendliness toward business it becomes increasingly evident that its conclusions inevitably will favor increased governmental control.

New Deal spokesmen long have proclaimed that price rigidities prevent competition, that our patent laws foster monopoly, that bigness in business is bad, and that federal licensing and control of corporations are necessary.

The committee is set up specifically to investigate these and other monopoly charges and to ascertain ways and means for effecting so-called reforms.

It is easy to foresee that the committee's findings may pave the way for completion of a revised NRA, already partially restored through provisions of the Wagner, Walsh-Healey, wage-hour and other laws.

The committee is proceeding deliberately in preparing for its investigation, but already there are signs as to how it will operate.

New Deal Ideas Will Rule In Committee's Decisions

Present indications are that it will be guided toward its conclusions largely by information it obtains from government sources such as the departments of commerce, justice, treasury and labor, and the federal trade and securities and exchange commissions.

Apparently not much consideration is to be given to the views and desires of business men.

Controlled by New Dealers, the committee automatically will serve as a clearing house for many New Deal ideas affecting business.

There is no assurance as to how these ideas will fare when the committee goes to work on them; nevertheless, many of them carry alarming implications as to extent to which changes in our business and industrial fabric are being sought.

For example, one government economist, according to STEEL'S Washington reports, has submitted a program aimed at "more goods, better goods and cheaper goods, more jobs, better paying jobs and steadier jobs." To obtain these laudable objectives, the economist proposes action as follows:

"Where a high degree of competition will accomplish the result, that method should be used; where a high degree of cartelization under suitable control will accomplish the result, that should be the method; where quasi-public ownership produces the result, that should be used."

Industrial Revival Faces Threat of More Regulation

In other words, business today is faced with threats of sweeping changes involving the possibility of more or less complete bureaucratic control.

It is unfortunate that the investigation is starting at a time when business has begun to show a healthy revival. For confidence can receive no stimulus from an effort at sweeping reforms at a time when business already is struggling under many burdens of this character.

In addition to the monopoly investigation other adverse factors loom ahead for business. For example, the administration wants an undistributed profits tax and a capital gains tax that will have "teeth" in them.

These threats are more apt to encourage a spirit of apprehension rather than one of initiative; arouse further distrust of industrial securities by investors, stimulate retrenchment rather than expansion, retard employment.

And there isn't much that business men can do about the situation. Until the majority of voters are convinced that such policies are affecting themselves adversely, business men will just have to do the best they can.

THE BUSINESS TREND

Index Registers Encouraging Gain

■ ADDITIONAL improvement in business was registered in a number of industrial barometers during the week ended Aug. 20. Reflecting this condition, STEEL'S index of activity in the iron, steel and metalworking industries recorded a sharp gain of 3.5 points to 70.4 per cent. This is the highest point touched by the index since the week ended April 23, when it stood at 70.8 per cent.

Contributing to the recent advance were moderate increases in all four barometers from which the index is composed. The most encouraging of these was a gain of 1.5 points in the rate of steelmaking operations, after remaining unchanged at 40 per cent in the previous two weeks. The present rate of 41.5 per cent in the week ended Aug. 20, represents the highest level the steel industry has operated since Nov. 6, 1937. Still further improve-

Where Business Stands

Monthly Averages, 1937=100

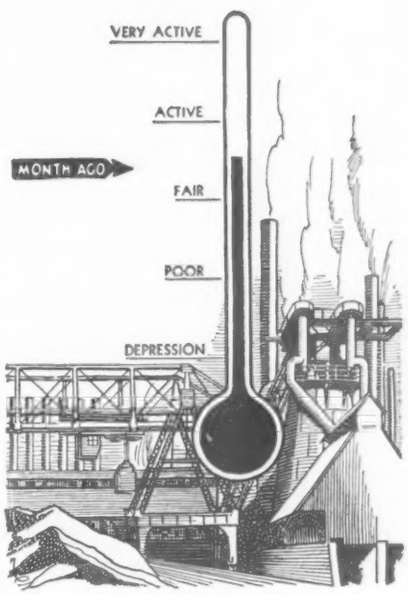
	July, 1938	June, 1938	July, 1937
Steel Ingot Output	**49.7**	**39.5**	**105.7**
Pig Iron Output	**38.9**	**34.9**	**112.2**
Freight Movement	**78.3**	**76.0**	**105.0**
Building Construction	**89.1**	**90.6**	**122.5**
Automobile Production	**31.1***	**45.3**	**109.3**
Wholesale Prices	**91.1**	**90.7**	**101.8**

***Preliminary.**

Industrial Weather

TREND:

Upward



The Barometer of Business

Industrial Indicators

	July	June	July
Pig iron output (daily average, tons)	39,122	35,358	112,947
Machine tool index	75.5	75.7	190.5
Finished steel shipments	441,570	478,057	1,186,752
Ingot output (daily average, tons)	79,282	63,010	168,763
Dodge building awards in 37 states (sq. ft.)	33,308,000	35,882,000	45,812,600
Automobile output	*130,000	189,399	456,909
Coal output (tons)	23,460,000	22,470,000	31,990,000
Business failures; number	995	1,018	618
Business failures; liabilities	$10,793,000	$12,236,000	$7,766,000
Cement production (bbls.)	10,967,000	10,535,000	11,597,000
Cotton consumption (bales)	449,511	442,742	582,011
Car loadings (weekly ave.)	568,225	551,970	762,418

*Preliminary.

Foreign Trade

	July	June	July
Exports	.....	$232,686,000	$267,185,000
Imports	.....	$145,898,000	$265,349,000
Gold exports	.....	$131,000	$206,000
Gold imports	.....	$55,438,000	$175,624,000

Financial Indicators

	July	June	July
25 Industrial stocks	$176.59	$155.49	$216.49
25 Rail stocks	$21.79	$17.94	$41.47
40 Bonds	$70.57	$66.64	$84.05
Bank clear'gs (000 omitted)	.....	$23,959,000	$26,015,000
Commercial paper rate, New York (per cent)	1	1	1
*Com'l loans (000 omitted)	$8,161,000	$8,321,000	$9,784,000
Federal Reserve ratio (per cent)	82.5	82.5	79.7
Railroad earnings	†$25,000,803	$16,496,701	$59,354,317
Stock sales, New York stock exchange	38,761,675	24,364,130	20,715,360
Bond sales (par value)	$178,157,075	$144,464,300	$160,160,800

*Leading member banks Federal Reserve System.
†June, May and June, respectively.

Commodity Prices

	July	June	July
STEEL'S composite average of 25 iron and steel prices	$36.32	$38.41	$40.03
U. S. Bureau of Labor index	*78.6	78.3	87.9
Wheat, cash (bushel)	$0.85	$0.91	$1.34
Corn, cash (bushel)	$0.72	$0.71	$1.33

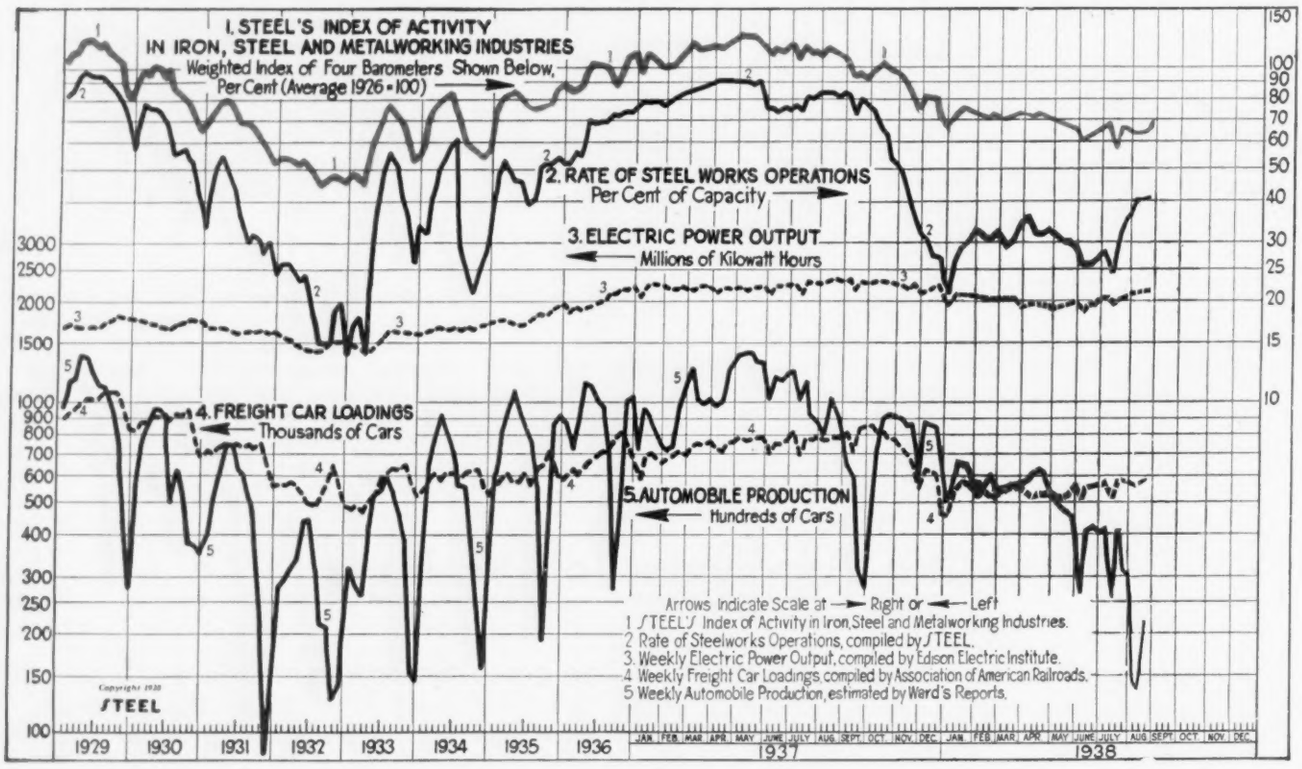
*Preliminary.

ment in this industrial indicator is anticipated in the week ended Aug. 27.

Reflecting the resumption of operations at Ford assembly lines after a two weeks shutdown, automobile production registered a gain of approximately 10,000 units to 23,940 in the week ended Aug. 20. The 13,790 cars assembled in the previous week are thought to mark the low point in operations during the current changeover period. Indications now are that assembly lines will continue at substantially the present rate over the next few weeks, gradually gaining momentum during the latter part of September.

Revenue freight carloadings registered a moderate increase to approximately 593,687 cars in the week ended Aug. 20. This represents the second consecutive weekly advance and, excluding the 602,300 cars in the week ended July 16, also represents the largest freight traffic for any week this year. Electric power consumption recorded the sixth consecutive weekly advance to 2,138,517,000 kilowatt hours. Current power output is now at the highest level since Jan. 8, but remains below the 2,304,032,000 kilowatt hours in the same week last year.

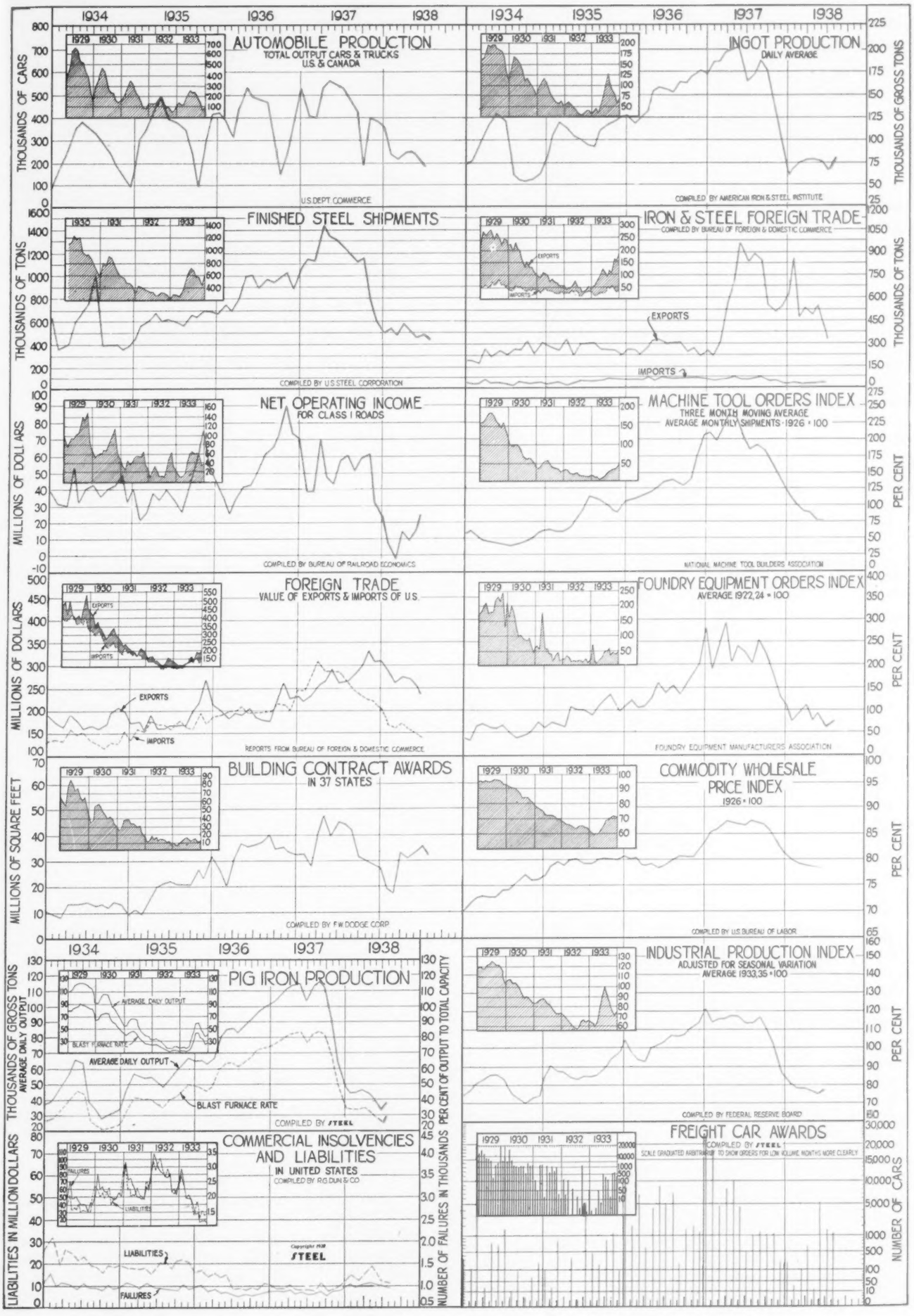
The general outlook for industrial activity still remains highly speculative, however business sentiment has improved on the basis of continued increase in the national steel operating rate and gains in a number of other industrial indicators. Encouraging progress in liquidating inventories, preliminary work on new auto models, large crops, direct spending and inflationary measures taken by the federal government and the backlog of deferred demand all are exerting their influence in aiding the industrial recovery.


1. STEEL'S INDEX OF ACTIVITY
IN IRON, STEEL AND METALWORKING INDUSTRIES
Weighted Index of Four Barometers Shown Below,
Per Cent (Average 1926 = 100)
2. RATE OF STEEL WORKS OPERATIONS
Per Cent of Capacity
3. ELECTRIC POWER OUTPUT
Millions of Kilowatt Hours
4. FREIGHT CAR LOADINGS
Thousands of Cars
5. AUTOMOBILE PRODUCTION
Hundreds of Cars
Arrows Indicate Scale at → Right or ← Left
1 STEEL'S Index of Activity in Iron, Steel and Metalworking Industries.
2 Rate of Steelworks Operations, compiled by STEEL.
3. Weekly Electric Power Output, compiled by Edison Electric Institute.
4 Weekly Freight Car Loadings, compiled by Association of American Railroads.
5 Weekly Automobile Production, estimated by Ward's Reports.
Copyright 1938 STEEL
1929 1930 1931 1932 1933 1934 1935 1936
1937
1938

STEEL'S index of activity gained 3.5 points to 70.4 per cent in the week ended Aug. 20:

Week ending	STEEL'S Index of Activity Index No. 1938	1937	Steelworks Operating Rate Per Cent 1938	1937	Electric Power Output Million KWH 1938	1937	Freight Car Loadings 1938	1937	Weekly Auto Output 1938	1937
May 21	67.1	122.2	30.0	91.5	1,967	2,198	545,808	779,276	46,810	131,306
May 28	66.5	115.6	28.5	75.0	1,973	2,206	562,061	794,855	45,120	131,421
June 4	58.1	105.1	25.5	75.0	1,878	2,131	502,624	692,140	26,980	101,629
June 11	64.4	114.4	25.5	74.0	1,991	2,214	553,854	754,360	40,175	118,798
June 18	65.2	110.3	27.0	75.5	1,991	2,213	555,569	756,289	41,790	111,620
June 25	66.0	112.8	28.0	74.0	2,019	2,238	558,937	773,733	40,918	121,032
July 2	66.5	115.3	28.0	77.5	2,014	2,238	588,864	806,168	40,945	122,890
July 9	57.1	103.8	24.0	74.0	1,881	2,096	501,013	682,205	25,375	100,981
July 16	69.9	115.7	32.0	82.0	2,084	2,298	602,300	770,075	42,010	115,380
July 23	68.7	108.0	36.0	81.0	2,084	2,258	580,882	770,980	32,070	88,055
July 30	69.0	109.1	37.0	84.0	2,093	2,256	588,703	782,660	30,390	86,448
Aug. 6	66.9	107.3	40.0	84.5	2,115	2,291	584,050	769,706	14,771	78,736
Aug. 13	66.9	113.8	40.0	84.0	2,133	2,300	589,561†	777,382	13 790	103,250
Aug. 20	70.4*	110.3	41.5	81.0	2,138	2,304	593,687*	781,247	23,940	93,339

*Preliminary. †Revised.


AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS U.S. & CANADA
U.S. DEPT. COMMERCE
THOUSANDS OF CARS
INGOT PRODUCTION
DAILY AVERAGE
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
THOUSANDS OF GROSS TONS
FINISHED STEEL SHIPMENTS
COMPILED BY U.S. STEEL CORPORATION
THOUSANDS OF TONS
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMESTIC COMMERCE
EXPORTS
IMPORTS
NET OPERATING INCOME
FOR CLASS I ROADS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MILLIONS OF DOLLARS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS · 1926 = 100
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
PER CENT
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
MILLIONS OF DOLLARS
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922,24 = 100
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
PER CENT
BUILDING CONTRACT AWARDS
IN 37 STATES
COMPILED BY F.W. DODGE CORP.
MILLIONS OF SQUARE FEET
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
COMPILED BY U.S. BUREAU OF LABOR
PER CENT
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
COMPILED BY STEEL
THOUSANDS OF GROSS TONS AVERAGE DAILY OUTPUT
PER CENT OF OUTPUT TO TOTAL CAPACITY
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1933,35 = 100
COMPILED BY FEDERAL RESERVE BOARD
PER CENT
COMMERCIAL INSOLVENCIES AND LIABILITIES
IN UNITED STATES
COMPILED BY R.G. DUN & CO.
LIABILITIES
FAILURES
Copyright 1938 STEEL
LIABILITIES IN MILLION DOLLARS
NUMBER OF FAILURES IN THOUSANDS
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARBITRARILY TO SHOW ORDERS FOR LOW VOLUME MONTHS MORE CLEARLY
NUMBER OF CARS

Open-Hearth Control

Automatic equipment for control of open-hearth operations has enabled many furnaces to produce a better quality of steel at about half the former energy consumption

By M. J. BRADLEY
Leeds & Northrup Co.
Philadelphia

■ PRODUCTION of special heats of alloy steels demands that definite specifications be met. Quality production is steadily replacing quantity production. Improved efficiency of open-hearth operation and increased production per unit have been brought about by the gradual introduction of what might be termed "steel engineering" in the open-hearth shop, an outgrowth of the combined efforts of open hearth operators and mechanical, electrical, ceramic, combustion and metallurgical engineers.

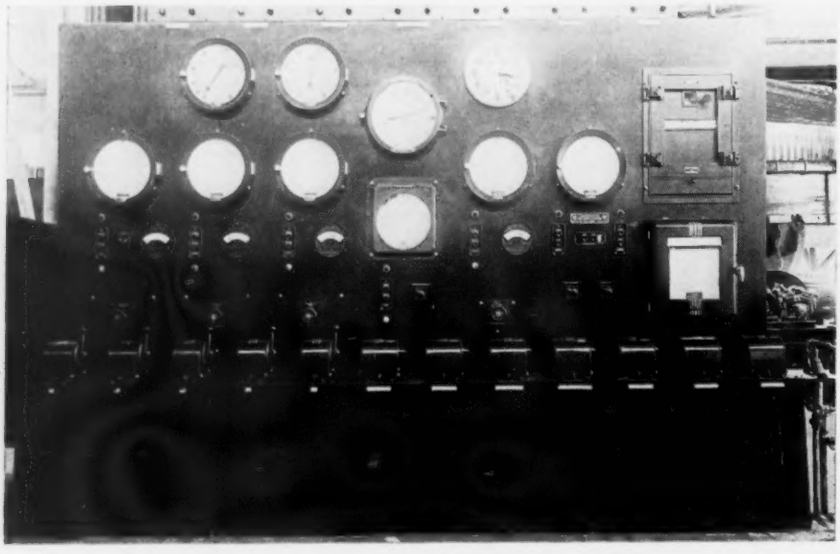
Changes in accustomed practice take place slowly, usually one change being made at a time and tried out over long periods of time before being applied to remaining furnaces in the same shop. This is not always successful, as important benefits often are obscured or even wiped out entirely by many other uncontrolled factors.

The addition of automatic furnace-pressure control may be cited as an example. When first tried, it demonstrated marked improvement on one furnace, while on another in the same shop results were disappointing. This was to be expected because over-emphasis was placed on this one factor and many other important considerations such as combustion, reversing and furnace conditions were not given their due share in considering results.

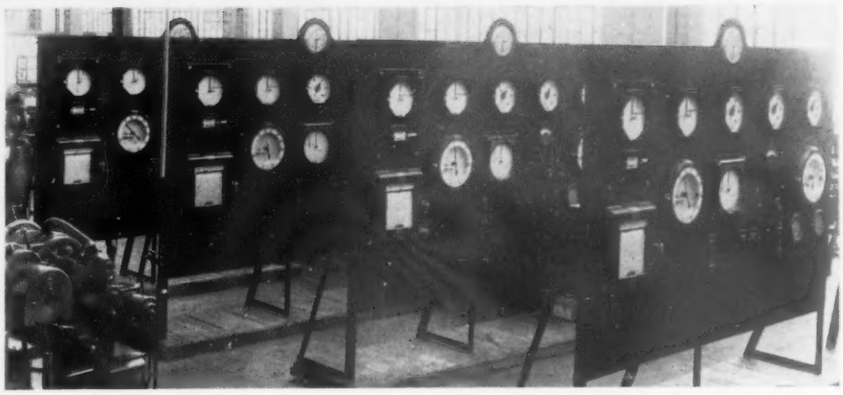
It is not intended to discuss in detail all factors in open hearth practice. However, there are a number of changes which have contributed materially to better efficiency in fuel utilization. During 1928 and 1929 a study revealed that on an average over 6,400,000 B.t.u. were used to produce a ton of ingots. Today, many furnaces are producing a much better quality of steel at about half this energy consumption. In fact, some of the furnaces which were built during the past year and furnished with instrument guides to aid in controlling pressure, reversal, roof temperature and fuel-air ratio are producing steel regularly with a fuel input several hundred thousand units less per ton even than this latter figure.

Interval Tabulated

The time interval between reversals was tabulated in the fuel study mentioned. Five hundred and fifty-nine reversals were made on one furnace during one week's operation. Average time between reversals was 12 minutes, shortest time was less than 2 minutes and longest period was 96 minutes. Operator complained frequently that one end of furnace was working much better than the other. Frequently he kept the furnace burning on the hot end during much longer intervals to heat up the cold end. He failed to realize that by so doing he succeeded only in cooling down the hot end to balance the cold end and consequently lost the advantage of the higher temperature of air preheat which the hot end possessed. Time consumed in reversing the furnace varied between 18 and 58 seconds and averaged 34 seconds. Thus, due to reversing, fuel was off the furnace



Control panel, No. 14 open-hearth furnace, Steel Co. of Canada. It includes automatic reversing by the temperature - difference method, automatic furnace pressure, automatic roof temperature-limit control, and Metermax combustion of blast furnace, by-product and combustion air



This is a composite of four panels for open-hearth control on a single job

something over 5 hours during the week's operation. Fuel valves were located some distance from levers used to reverse the air lids and dampers.

Present tendency is to have dampers and air lids motor operated with their controls located near the fuel valves and door opening mechanisms. This permits the operator to reverse entire furnace quickly from a central control station. Many furnaces are reversed automatically by the temperature-difference method in which the reversing sequence is started by temperature conditions within the furnace. This keeps furnace ends balanced in temperature and working conditions. What is equally important, this method carries through the reversing sequence in the shortest time consistent with combustion conditions, thus keeping the fuel on the furnace more continuously than when reversed manually.

Savings Result

Improvements in reversing open-hearth furnaces have resulted in substantial savings. Recently at the open-hearth conference of American Institute of Mining and Metallurgical Engineers in Buffalo, in reply to the question "Are automatic reversals successful?", one open-hearth superintendent stated they were reversing their furnaces automatically by the temperature-difference method. It required only 8 seconds to make a complete reversal and the fuel was off the furnace only about 4 seconds each time. Since reversals take place approximately every 15 minutes, fuel is off only six minutes per day, or less than three-quarters of an hour per week.

Another open-hearth superintendent reported they had compared the results of nine campaigns on one furnace before the automatic reversing equipment had been installed with seven campaigns after the equipment had been installed. Results indicated a substantial increase of tonnage, an increase of roof life, an increase in front-wall life, and a fuel saving, to more than justify the expenditure for the equipment. As no other changes had been made on the furnace, this indicates a marked improvement.

When a furnace is not working satisfactorily, the first helper usually believes it does not have enough stack pull. As he usually keeps the stack damper wide open, there is nothing further he can do about it. Some years ago, in a shop where all the first helpers were complaining about poor stack pull some bricks were removed from the clean-out door at base of the stack on one furnace to *reduce* stack pull. The helper was convinced that this would make conditions worse and objected strenuously. After a few days' operation, however, he admitted rather reluctantly that furnace operation had improved as a result of *lessened* stack pull.

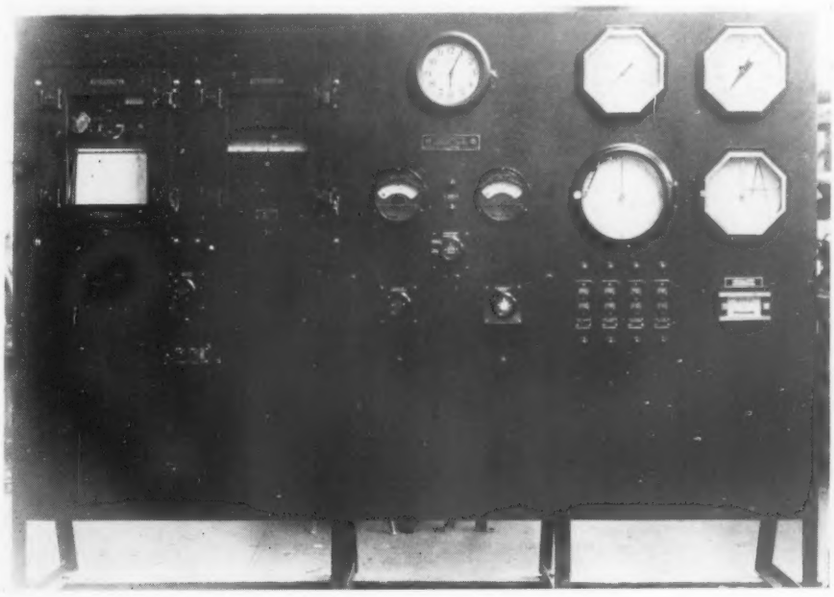
In a short time, doors on all stacks were opened and provided with shutters so some regulation of stack pull was available. The real difficulty was the stacks, having far too much pull, had been pulling in excessive volumes of cold air around doors and through the furnace structure instead of through the checker chambers where it could be preheated for combustion.

Results of many installations of furnace-pressure control have convinced the majority of operators that such equipment will maintain a uniform pressure within the furnace regardless of changes in amount of fuel being used or changes in weather conditions. This control definitely limits cold air infiltration into a furnace and maintains the shape and direction of the flame. It also insures a maximum supply of combustion air through checker systems where it is preheated for combustion. These improve furnace operation materially with a resulting saving in fuel and increase in production.

Many Installations

During 1937, over 100 open-hearth furnaces were equipped with automatic furnace-pressure control. These installations were not made as single units for study purposes but practically all were shop installations where every furnace in the shop was equipped; at least four separate shops of 14 furnaces each were included.

The demand is for a stabilized pressure control free from hunting and sensitive enough to maintain pressure conditions within the furnace to around 0.001-inch of water at the set point; also for control equipment that has a speed of response which is synchronized with



This panel includes combustion control, pressure control, automatic reversing and checker chamber temperature measurements. Also temperature before and after going through waste-heat boiler

the rate of furnace response. Some added features include having the furnace pressure- control equipment keep the stack damper fixed when a furnace door is opened and also open the stack damper during the reversing operation so reversing may be speeded up.

Firing open-hearth furnaces has changed greatly during the last few years. Formerly, furnaces were designed and equipped to burn one fuel—gas or liquid. Now furnaces are equipped to burn multiple fuels, either gaseous or liquid, and even combinations of both types at the same time in varying proportions at different stages in the heat. These changes have necessitated changes in the air supply for combustion also.

On natural draft furnaces, air for combustion is drawn into checker chambers by the "stack effect" of the hot checkers and uptakes. Unfortunately amount of air depends upon checker temperatures, lower temperatures producing less air. This effect is noticed when starting up a furnace and especially during melting down of the charge when the maximum amount of fuel is desirable to speed up furnace operation. This deficiency may be augmented especially during the melting stage of the heat, by increasing stack draft and pulling in cold air around doors and furnace structure. Unfortunately this is not the most efficient way to provide air for combustion.

Air saucers or dampers are necessary for reversing and are capable of being adjusted in height of opening to help regulate the air supply. As the "stack effect" in the checker system has a much greater influence on the air supply than the saucer position, the first helper seldom changes the air saucers but depends entirely on fuel adjustment. In other words, since the air supply is somewhat a fixed quantity, the first helper endeavors to burn the maximum amount of fuel the furnace will take without smoking too noticeably. This method has proved very wasteful of fuel.

The adaptation of multiple fuels has necessitated more positive methods of measuring and controlling both fuel and combustion air. On all new furnaces built during the last two years, without a single exception, provision has been made to supply air for combustion with a forced draft fan. Thus air may be accurately measured and supplied in correct quantities for the amount of fuel being used without increasing stack draft to obtain a variable additional supply.

In the meeting referred to previously, open-hearth furnaces were described on which fuels and combustion air not only were indicated, recorded and controlled but were automatically ratioed in proper proportions regardless of amounts used. Thus combustion practice on open hearth furnaces is passing rapidly from no metering and no control to automatic control, metering and ratioing.

Checks Roof Temperature

The usual method of preventing the furnace roof from fusing and stringing due to overheating requires the first helper to look at the inside of the roof occasionally. If it appears too hot he cuts back on the fuel. It takes considerable experience to judge temperature conditions accurately within the range where roof damage is likely to take place. Usually the temperature is allowed to increase until the roof starts to sweat or drop and frequently continues until the roof actually strings before it is noticed. Obviously the roof has suffered more or less damage, frequency and extent of these overheating periods in a great measure determining the roof life.

The adoption of insulation increased overheating possibilities and required the first helper to watch roof temperatures more carefully. It speeded up development of temperature-measuring methods for his guidance. At first, thermocouples were imbedded between the insulation and roof brick. However, the heat lag through the roof brick was so great that this method did not prove satisfactory. Soon special roof blocks were developed with a much faster temperature response than roof brick. These blocks are installed in the roof as a sighting field for a Rayotube used for temperature measurements. This setup is being used to automatically cut down on fuel when temperature

(*Please turn to Page* 60)

Stock Parts Transported in Folding Boxes

■ **Although designed primarily for use by retail grocers and wholesale bakers, folding boxes of the type shown here have proved very satisfactory for the transportation of small parts at Garlock Packing Co., Palmyra, N. Y. Manufactured by John G. Elbs, Inc., Rochester, N. Y., these boxes are used widely as temporary storage bins, in laundries for handling wash, in libraries for handling returned books, for broken package deliveries and many other purposes**

New Bolt Head Aids Steel Construction

■ DEVELOPED in Europe and recently introduced in this country by Fanner Mfg. Co., Cleveland, a new safety-hook bolt head provides interesting possibilities for use in steel fabrication.

Fig. 1 shows the safety-hook bolt head itself. Tests have shown a combination of safety-hook bolt head

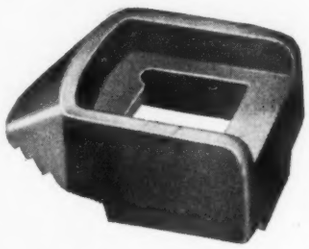


Fig. 1—Safety hook bolt head

with standard bolts to withstand extremely high loads. Applications of this device include erection of monorail, temporary construction, heating-duct erection, conveyors, clamping work in machine shops and other similar uses. They are useful wherever girders, beams and angles are employed.

Fig. 3 shows safety-hook bolt heads used on each side of a crane rail to fasten it to main track girder without drilling rail flanges. Wooden battens are fastened to steel

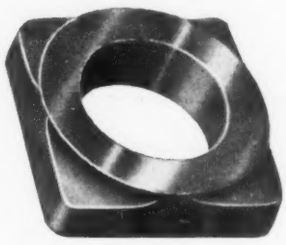


Fig. 2—Deep washer

girders using safety-hook bolt heads to hook over girder with bolts extending through batten with nuts and plain washers at other ends. A steel plate underneath the wood batten may be used to distribute compressive forces over a wider area.

Fig. 4 shows how safety-hook bolt heads are used for rapid and permanent mounting of standard hangers or brackets to girders. Hook bolt head cannot turn sidewise because undercuts are in contact with side of girder.

When a safety hook is used on the nut end of a bolt, the deep washer shown in Fig. 2 is used to permit nut to be tightened freely. Applications where nuts are used with the safety hook include concrete work. Here rag bolts are imbedded in the concrete and the safety-hook bolt head used to clamp beams to concrete. Another application is in making suspension-type pipe supports from plain round rod threaded at each end and fastened to beam flanges using hook bolt heads with a steel spacer plate underneath the beam. Where pipe is parallel with beam, safety hooks are used at either side of bottom flange. When pipe is at right angles to beam a simple formed plate hooked at one side is used to maintain rod ends and hook bolts in place along one edge of the bottom flange.

Hook bolt heads also are suitable for use with lag screws and set

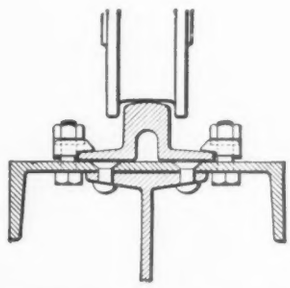


Fig. 3—Safety heads hold crane rail to main track girder without drilling rail flanges

screws for clamping work to beams or clamping beams to structures.

Using two safety-hook bolt heads and thin steel spacer plates, it is possible to make a wide variety of clamping fixtures to join structural sections. Fig. 5 illustrates joining of two I-beams together without drilling beams or welding, yet affording a strong permanent connection. Beams at any angle can be

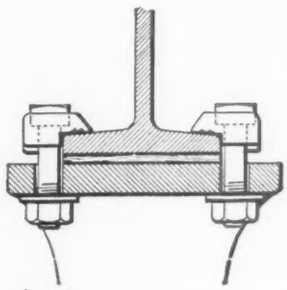


Fig. 4—How to mount standard hangers or brackets to girders with safety hook bolt heads

joined by simply drilling holes in space plate between them so bolts come at correct points. In this way parallel beams or runway track are secured by a thin spacer plate and four bolts, each bolt being fitted with two safety-hook bolt heads and one deep washer. In a similar manner, diagonal or curved runway track can

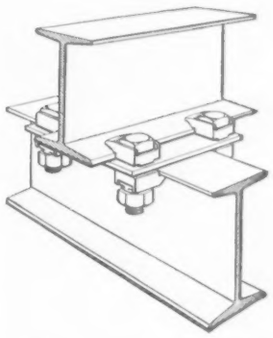


Fig. 5—Cross beams are effectively held together using a punched plate to position safety hooks as shown

be joined using a diamond-shaped spacer plate.

Runway track may be suspended at a distance below main girder using long bolts, pipe for spacing, and safety-hook bolt heads with space plates at both girder and track. Fig. 6 illustrates suspension of runway track from main girder using rods threaded at each end with space plates, safety-hook bolt heads and deep washers. This system also can

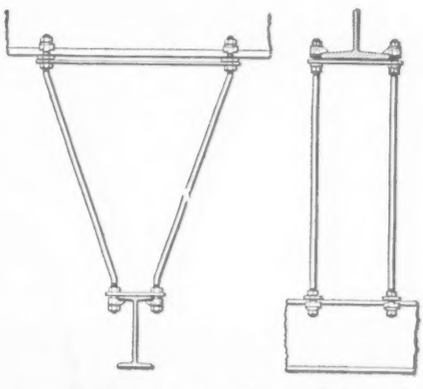
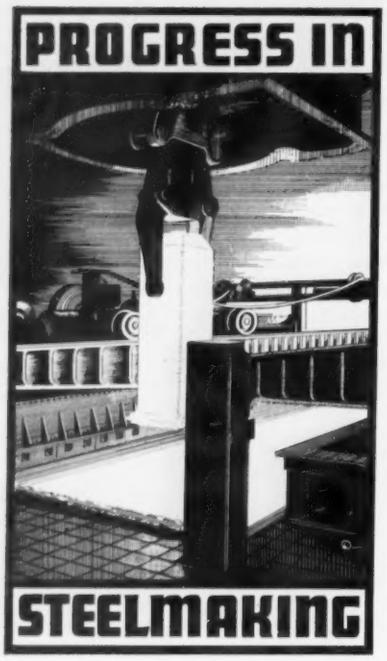


Fig. 6—Rods threaded at each end afford a means of suspending runway track from main girders using spacer plates and safety hooks

be used where track and beam cross at various angles.

Horizontal steel girders may be secured to vertical steel stanchions without drilling flanges of either girder or stanchion by simply employing an angle and four bolts using safety-hook bolt heads to clamp over flange edges.

Hook bolt heads and deep washers at the present time are made to fit bolt sizes from ¼ to 1 inch.



No Backtracking

Mill modernization program features new layout developed to assure minimum handling of material in process from raw stock to finished galvanized sheets

By H. W. LYNN
Wean Engineering Co. Inc.
Warren, O.

■ WHEN Reeves Steel & Mfg. Co. at Dover, O., recently modernized its sheet mill, particular attention was paid in laying out the flow of materials for most efficient handling throughout all the processing operations. As will be noted from examination of the flow diagram, Fig. 3, material now is handled with no backtracking from bar to finished sheet.

Present yearly capacity of this mill is 70,000 tons. Output includes black, blue, pickled and galvanized steel sheets in widths from 24 to 48 inches and averaging 26 gage in thickness. About 75 per cent of this tonnage is fabricated into finished products in the company's own plant, which immediately adjoins the sheet mill, as may be seen from diagram, Fig. 3.

In addition to steel sheets, products include roofing and siding in all gages and styles, conductor pipe, eaves trough, special gutters, ridging, metal shingles, steel ceilings, galvanized pails, tubs, baskets, coal hods, ash and garbage cans, laundry units, stove and furnace pipe and elbows, stove boards, air-tight wood heaters, etc. These products are sold to the hardware trade by jobbers and dealers throughout the country.

Started in 1937, the million dollar mill-modernization program has just recently been completed. New buildings were added to the old hot mill building to accommodate the installation of roughing mills and to provide breakdown storage. An addition was made to the annealing building and a leanto added in the galvanizing department. Hot mill building is approximately 200 x 600 feet. It opens into cold mill, annealing and galvanizing building which is about 130 x 640 feet and at right angles across the north end of the hot mill building as detailed in Fig. 3.

Fig. 1—Pickling building and new galvanizing pot settings

Much new equipment was installed including a gas producer unit, a three-high mill, automatic shearing unit, vertical radiant tube annealing covers, galvanizing equipment, mechanical tables, conveyors and hot mill polishers.

Sheared and Piled

Bar comes from the original bar storage building shown in Fig. 3. is sheared on a standard bar shear and piled on the charging platforms at rear of double and single pair furnaces. The double pair furnace provides material for two hand roughing mills. It has a hearth 45 feet long and 62 inches wide. The single pair furnace supplies bars for the three-high roughing mill.

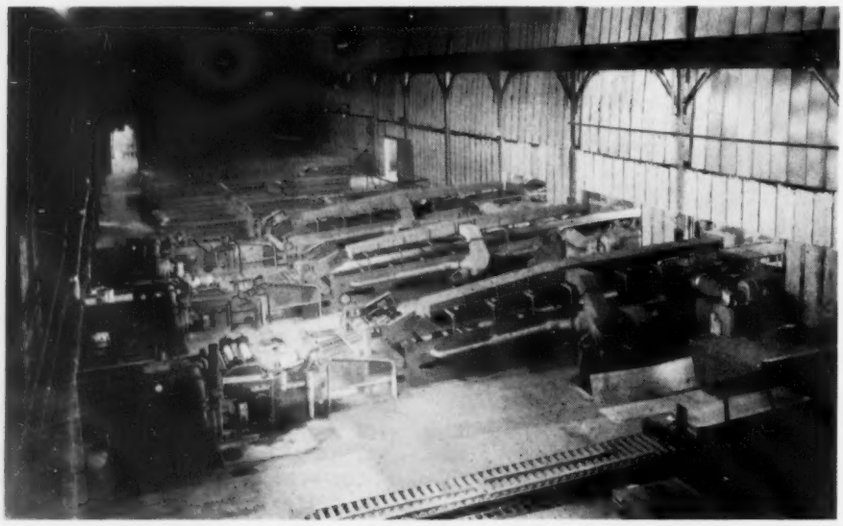


Fig. 2—Spangle roll conveyor, cooling conveyor, wash tanks and dryers

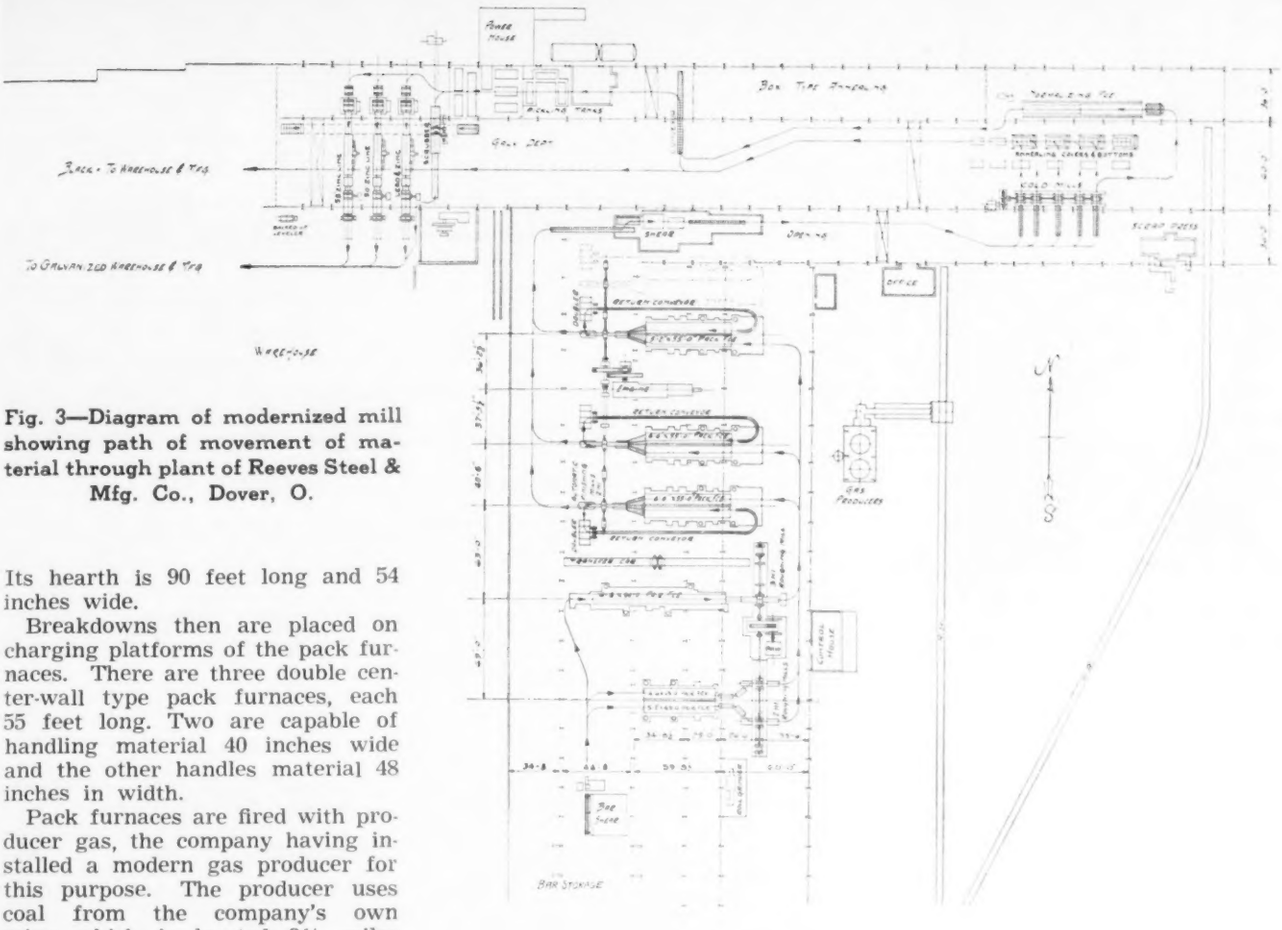


Fig. 3—Diagram of modernized mill showing path of movement of material through plant of Reeves Steel & Mfg. Co., Dover, O.

Its hearth is 90 feet long and 54 inches wide.

Breakdowns then are placed on charging platforms of the pack furnaces. There are three double center-wall type pack furnaces, each 55 feet long. Two are capable of handling material 40 inches wide and the other handles material 48 inches in width.

Pack furnaces are fired with producer gas, the company having installed a modern gas producer for this purpose. The producer uses coal from the company's own mine which is located 3½ miles from the mill. An overhead cable bucket conveyor is used to bring the coal from the mine.

Finishing mills and furnace are equipped with modern conveyors and mechanical tables for the most efficient production of sheets. All material rolled on the finishing mills is doubled.

Tractor Moves Sheet

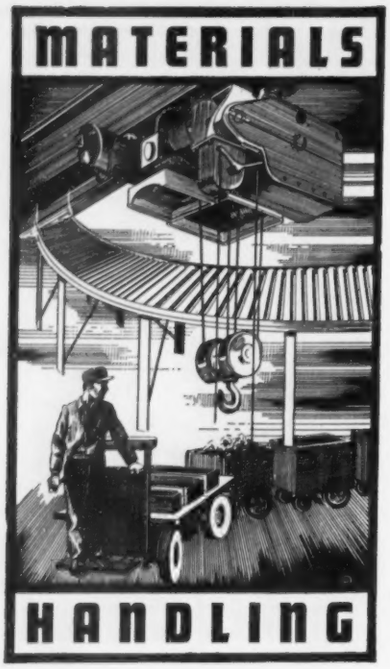
After the sheet pack has been finished, it is piled. A tractor carrier then transmits the pile to the charging platform at the automatic shear where the sheets are sheared to size for further processing. After shearing, sheets move to the floor area where the packs are opened, then to the cold rolls and on to the annealing department. This department is equipped with a normalizing furnace and radiant-tube annealing covers. These vertical-tube annealing furnaces burn natural gas and are equipped with automatic temperature control.

Following the annealing process, sheets pass through the pickling department and then to the water storage tanks if they are to be galvanized. Material that is not galvanized is passed through a sheet scrubbing machine for cleaning and drying. Sheets that must be absolutely flat for special purposes are passed through a backed-up roller leveler installed for this work.

The galvanizing department is completely new and includes equipment for modern straight line production. Fig. 1 shows pickling building and new galvanizing pot settings. Sheets are fed into an acid unit, and through a galvanizing rig, this rig being driven by two individual motor units which are synchronized for the desired operating speed. Galvanizing pots are fired with natural gas under complete automatic control. An interesting feature of this installation is the mounting of all control equipment in a tunnel adjoining the galvanizing pot settings, protecting this equipment and also affording easy access to the settings themselves.

Coming from the galvanizing pot, the sheets pass over the spangle conveyor and onto a cooling conveyor where an air blast is directed on them. Then they go to a washing machine, producing a clean sheet. From this point, sheets pass through a drying unit. Fig. 2 shows spangle roll conveyor, cooling conveyor, wash tanks and dryers. Sheets are leveled before final inspection and shipment. Fig. 4 shows roller leveler and special lighting for inspection.

Fig. 4— Here is roller leveler and galvanized sheets on final inspection



A Container System

Obtains 30 per cent increase in mileage covered daily by trucks and trailers through use of standardized containers and automatic loading and unloading equipment

■ ADVANTAGES to be obtained from the creation of a nation-wide container system such as that advocated by James B. Eastman, federal co-ordinator of transportation, to eliminate waste and facilitate the handling of goods in transit is seen in the work conducted in this field by the Fisher Body division of General Motors Corp.

Fisher produces passenger car bodies for Chevrolet, Pontiac, Oldsmobile, Buick, La Salle and Cadillac and is probably the largest automobile body-building organization in the world. It operates 11 manufacturing and 14 assembly plants in 18 cities throughout the country.

Shipments of material between these plants last year averaged approximately 1740 tons a day. The highly efficient system evolved for the handling of this large volume of traffic is the result of a progressive study undertaken with a view to developing transportation facilities to meet advances in production methods.

It was started following the institution of a trucking system set up several years ago to serve Fisher Body plants in Michigan when it became apparent that much could be done in the matter of introducing new practices that would provide better service in the handling of material between the final fabricating and initial assembly operations.

This led not only to the development of specialized types of road equipment but to the construction of a wide variety of containers which reduce damage to a minimum by avoiding unnecessary handling. The container system thus far has been limited to truck and trailer use by reason of existing regulations but Fisher officials, as a result of their experience, predict that it will provide a vast new source of revenue for the railroads once the way is cleared for its adaptation to rail service. They state railroads could be assured of a large increase in the volume of freight business if a container service with an equitable rate schedule were to be established.

The trend toward larger stampings in body construction made it increasingly difficult to load the standard type of equipment with

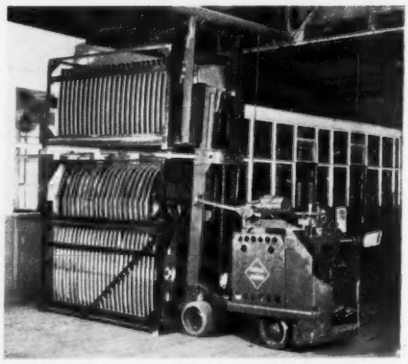


Fig. 5—Nesting type containers are stacked by electric tiering truck

Fig. 1—(Top) Lo-swung trailer unit gives larger load carrying capacity.

Fig. 2—(Bottom) Structural supports are at top of trailer, a thin floor framing being hung from the side posts

which the inter-plant shipping department commenced operations in 1930. At about the same time, a tendency upon the part of state governments to limit the size of vehicles

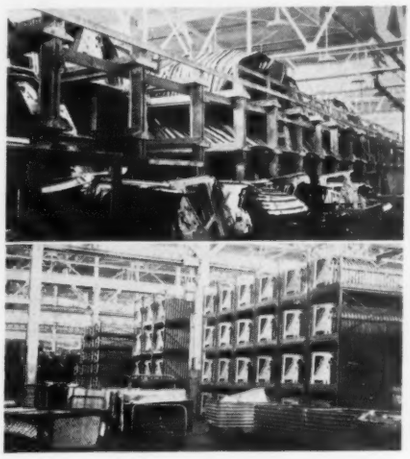


Fig. 6—(Top) Old method of stocking and handling body panels. Fig. 7—(Bottom) New method uses notches in containers to space parts on edge

using the highways began to show itself.

The answer was the "lo-swung" trailer built to the maximum dimensions allowed by law and with a minimum of road clearance and as little space as possible devoted to the running gear. This design is shown in Fig. 1. The problem of obtaining a ground clearance of 18 inches and a 30-foot span between the supporting wheels was solved by the introduction of a new type of bracing. A large amount of space is wasted beneath the ordinary trailer by the depth of the truss necessary to carry the load for which it is designed.

Overhead Trusses Used

In the lo-swung type developed by Fisher Body, overhead trusses are used. Structural steel bents, located over the wheels at each end, are attached to the overhead frame from which the door posts forming the side openings hang. The thin, structural-steel floor framing is hung from these posts as shown in Fig. 2.

Laws governing the use of the highways likewise affected the long trailer formerly employed in the shipment of assembled bodies. This difficulty was met by the introduction of the double-decked body trailer which carries three bodies inside and two outside.

Since side openings are not required in this vehicle, deep trusses in the side-walls carry the load, permitting a similar reduction in road clearance. Also, overall height is kept to a minimum by making the hinged and counter-balanced roof of a shape that conforms roughly to the contour of the bodies carried inside, the roof being raised to load and unload the lower deck.

Trailer Enlarged

With the opening of the new Fisher plant at Lansing, which supplies the body needs of the Oldsmobile division, a special double-decked trailer was devised. This unit, shown in Fig. 3, is loaded from the side and makes the 5-mile round trip between the plants in a matter of 26 minutes, delivering 14 bodies to Olds and returning with 14 empty trucks to Fisher.

A sloping, double-decked platform the upper section of which is fed by a conveyor, is employed in loading this ingenious trailer. When it pulls in alongside the loading dock, the driver presses a push button which trips the locking mechanism and the 14 bodies simultaneously roll into the trailer by force of gravity.

The tracks within the trailer which engage the wheels of the body trucks, are hinged at the receiving end. They are held in position at the other end by chains hung from a motor-driven shaft. The double-decked platform at the unloading dock slopes away from the trailer. This permits unloading to be accomplished by winding up the suspension chains sufficiently to incline the tracks and permit the bodies to roll out. Similar stations are provided for handling empty body trucks.

Perfect alignment of the trailer with the platform, it will be seen, is essential in the loading and unloading operations. This is provided by fitting the trailer with four supplementary steel wheels of the railway type which engaged rails embedded in concrete curbs as the trailer pulls up to the dock at each end of its run as shown in Fig. 4.

Monorail trailers form another Fisher innovation. It was evident that the one-piece solid-steel "turret top," because of its size, could not be handled in the ordinary manner if damage in transit was to be avoided. The result was the development of a special trailer, equipped with an I-beam monorail in the roof.

Monorail System

At the shipping and receiving points, similar monorails are provided at ceiling height. High-lift electric trucks fitted with I-beam frames are used in conjunction with the monorails in the plants. The roofs are loaded at floor level, being transferred to and from the factory monorail by this means. In practice, it is the custom to have a complete load on the monorail at manufacturing plants awaiting the arrival of the trailer.

The next development of im-

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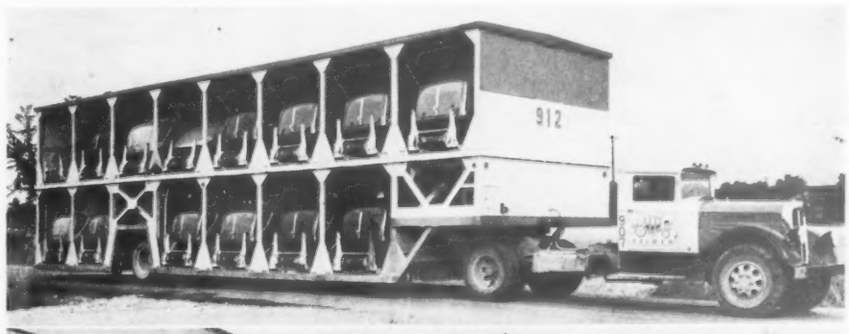

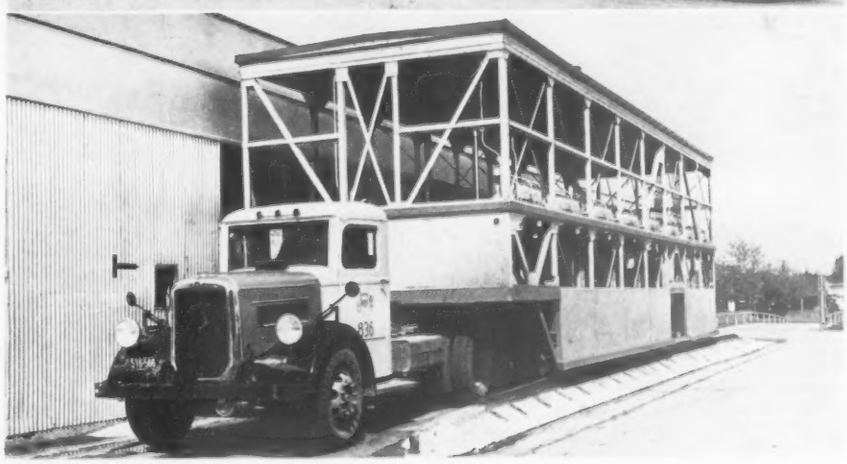

Fig. 3—(Top) Mammoth trailer carries 14 bodies. Loading is automatic.

Fig. 4—(Bottom) Auxiliary railway type wheels and curb rails assure exact positioning for automatic loading-unloading operations

Photo courtesy R. G. LeTourneau, Inc., Peoria, Ill.

YOU CAN COMBINE THEM ALL IN A WELDED DESIGN

Welding allows the engineer to use steel of various physical and chemical properties to adapt the part for a combination of different service requirements. Result: Every element of the design is built for longer life, better performance and higher service economy. A better product for greater profits.

An example is the gear for an earth scraper power unit, shown above. The rim is welded from mild steel bar for low costs and to facilitate cutting of teeth and case-hardening. The web is cut from high-tensile steel plate for maximum strength with minimum weight. The hub and oil ring are welded from medium carbon steel to provide good resistance to abrasion. The four parts are welded together in a jig. The blank is machined. Teeth are cut and case-hardened. Result: A gear that meets three different service needs. A gear that saves money for the manufacturer and the user.

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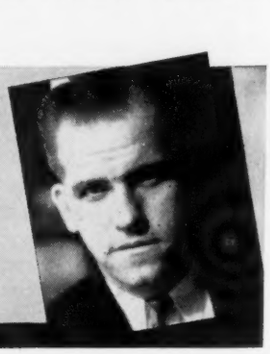
MR. E. J. DE WITT, *Vice Pres., Chief Engr., Wallace Supplies Mfg. Co., Chicago, Ill. says*—**"Because it eliminates parts and pattern storage, obsolete inventories and permits greater freedom of design, arc welding has been adopted 100% for Wallace Benders."**



Weight Reduction

Unique resistance welders give high production. Speeds up to 150 feet per hour also obtained in fusion welding of underframes by employing Union Melt process

Part II

By F. E. GOODING
Fairbury, Ill.

■ LONGITUDINAL butt joints between sheets are arc welded by hand and ground off smooth. This provides a continuously smooth surface for the finish. After welding, the side is tested for high and low spots. Any variation which would be noticeable is corrected by heating or beading on the inside of the sheet.

One advantage of the electronic timer employed here is its ability to energize the magnetic contactor and the welding electrodes at precisely the same point in the alternating-current voltage wave. This gives identical welding currents and reduces wear and tear on the electrodes. Welding time is set by a dial switch in the control cabinet.

Electric current is delivered to the welding transformer on the carriage from two trolley wires, using double trolley shoes in parallel on each wire to assure good contact. Also separate trolleys are provided for each welding jig. The feed lines for all welding operations extend direct to the powerhouse switchboard to reduce the effects of voltage variations.

Welding the curved top is done in another special resistance welding setup. Here the curved top is welded into a single unit from 12-foot strips of 16 or 18-gage high-tensile alloy steel curved to fit the contour of the car top. Ends of these strips are punched for riveting to sides and ends during final assembly. Strips are welded to flanged channels or carlines similar to those used in the side of the car, except that they are formed to fit the interior contour of the car top. Longitudinal reinforcing Z-bars are spot welded to the curved top strips in a subassembly. Top strips are welded to channel web with the two flanges extending inward for attachment of interior trim.

Set By Hoists

These top sections, with reinforcing Z-bars welded on, are set by hoists on a long wood-and-metal jig which matches interior contour of car top. Copper back-up strips are mounted back of the welding seams. After adjusting top strips to position, each is held down tightly on the jig by a long steel strap drawn over the top as shown in Fig. 5.

Edges of strips are seam welded to the channel or carline by a special resistance welding unit built on a gantry type crane with the I-beam cross member curved to make the electrodes follow the contour of the car top. Crane legs of this unit rest on the floor and are moved forward between welding positions by a roller chain.

The welding head, itself, consists of two roller-type welding electrodes about ¾-inch apart which roll up over the joint, one roller on each side of the butt joint between adjacent strips. These rollers are held against the top sheets by two independently controlled air cylinders which exert a pressure of 2600 pounds on each of the roller-type welding electrodes.

Welding is on the series principle.

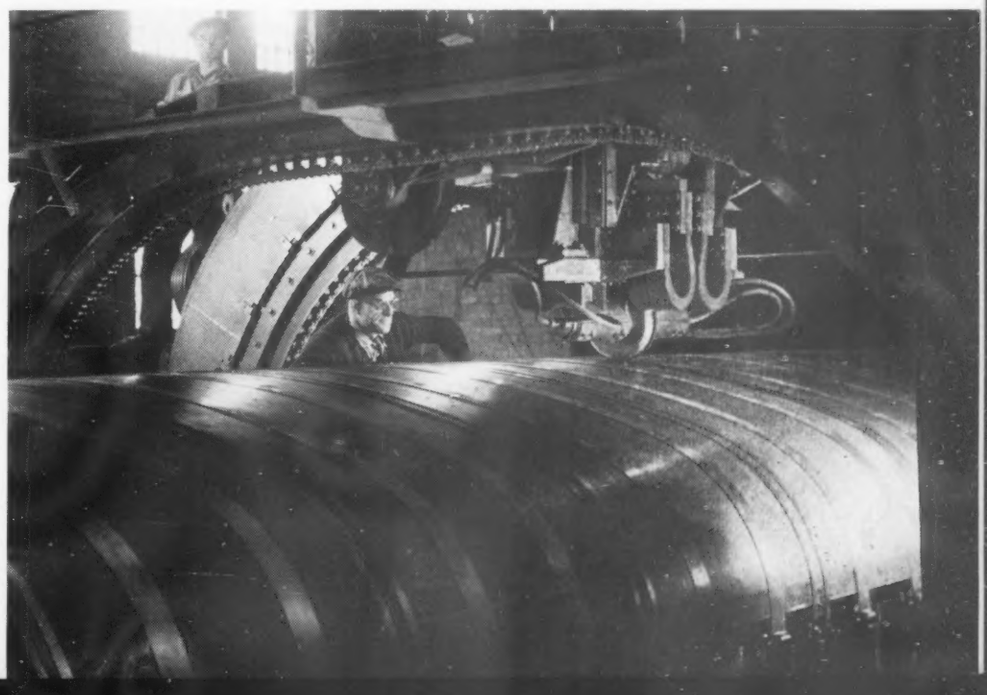


Fig. 5—Resistance welder, traveling on gantry type frame extending over car top, makes double seam weld on either side of sheet butt joint. Several completed welds can be seen

It is similar to that on the side welding, except that contact is maintained continually and the current is turned on and off at predetermined intervals as the roller type electrodes travel across the car top, always under pressure. Flow of welding current is from one wheel through the metal to the copper back-up strip and out through the metal to the other roller, thus making a weld on each side of the butt joint simultaneously. Welding head is driven over this curved I-beam by a roller chain rack which provides constant, positive driving speed. Spacing between welds is controlled by adjustable electronic timing of the interval between applications of current.

Begins At Center

In welding car tops, the operator begins at the center of the top and welds to one edge, then returns to the center and welds to the other edge. This has been found more satisfactory than to begin at one edge and go across as it results in less likelihood of shifting or twisting sheets. On car sides with long steel plates, one seam is made in a upward direction, the next down. After this, the horizontal welds are made.

Welding current, timing and spacing of welds, electrode area in contact and all other factors influencing the weld have been determined by actually welding full-size test sections and making thorough inspections before, during and after testing to destruction. This also checks on the design. Kind and thickness of material, size and spacing of spots, metallurgical effect of weld on the metal, variations in surface and prevention of buckling are a few of the many factors that must be considered in the different types of construction.

After best setting of the current, timing, spacing and size of electrode has been determined, the welding unit is set and maintained at those values by means of indicating instruments at the operator's control cabinet. No variation is permitted. Checking equipment includes a voltmeter on the incoming power line, a cathode ray oscilloscope for measuring actual welding current and voltage in any part of the welding circuit, and air pressure gages for checking the welding pressure.

Welding electrodes are machined and checked to gage and are changed if "mushroomed" from heating and pressure. Operators are not permitted to file electrodes for repointing in operation.

Car ends are built up by combination arc and spot welding with stationary spot welders. Window trim is applied by portable spot welders.

The main part of the car for resisting impact and withstanding draw-bar or load tension is the underframe. Until recently this had consisted of heavy steel sections and castings. Now it is welded of high-tensile alloy steel employing the recently developed Union Melt method of welding.

The welded center sill of the underframe consists of two special rolled alloy Z-bars welded together to form a flanged channel of cross section specified by the Association of American Railroads. Upper bolsters and arms for supporting floor and preventing sides spreading are built up of channels and arc welded to this center sill while in the jig. Fig. 7 shows completed underframe.

In welding the center sill, the two Z-bars are clamped to a long jig with the two edges butted tightly together and the joint seam arc welded by another special automatic machine. The joint is backed up with copper to prevent the molten metal running out as the welding arc penetrates entirely through the joint even though welded from one side.

Supported By Crane

The welder is supported from overhead on a specially built gantry type crane. Two small guide wheels on the welder straddle the seam. Alternating current is supplied at about 35 volts and 900 amperes from a welding transformer. Welding wire is fed into the seam at a constant speed from an overhead reel as it is melted into the seam by the welding current. The unit welds 5/16-inch steel at the seam at the rate of 30 inches per minute (150 feet per hour).

During the melting and welding process, welding wire and weld metal are protected from atmospheric gases by a powdered flux which is distributed on the seam ahead of the weld. The powdered flux is led from hoppers above down

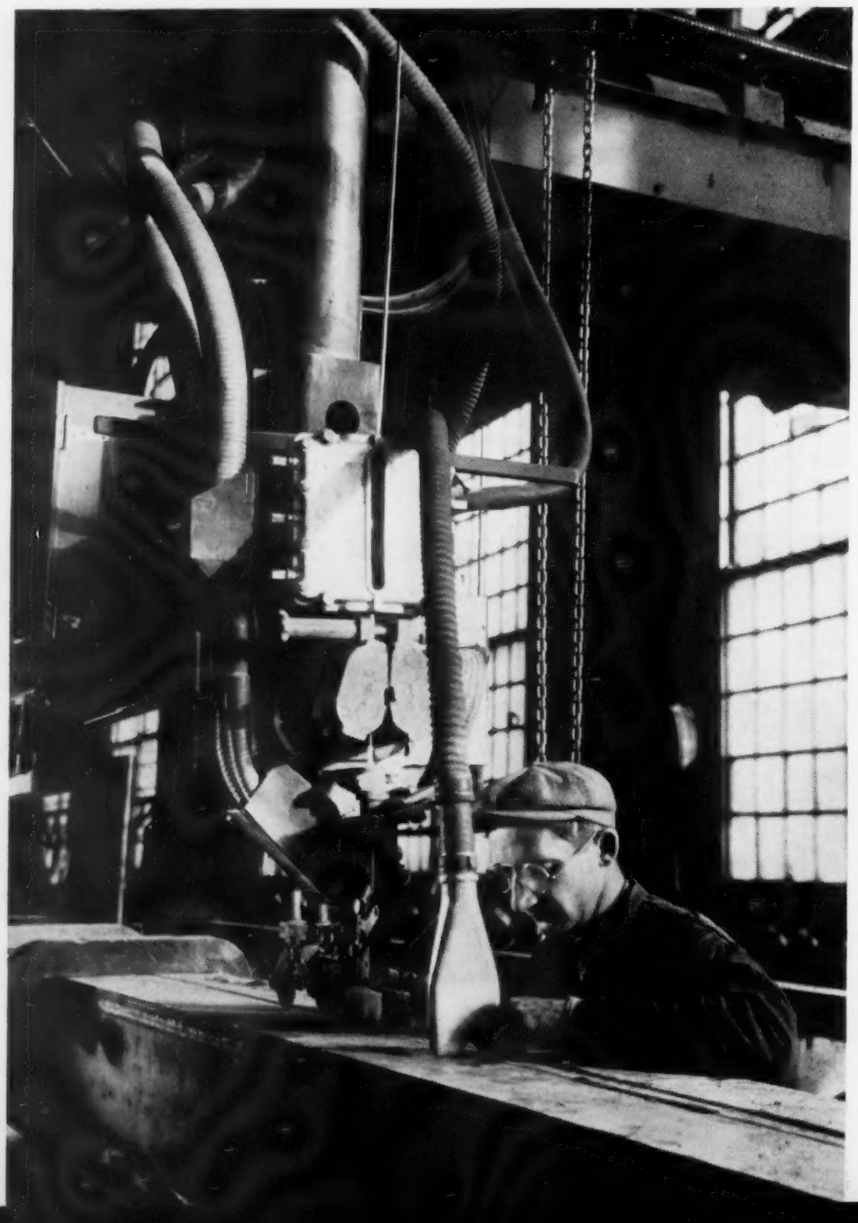


Fig. 6—Welding head of Union Melt welding machine. Tubes conduct flux over joint, weld arc is maintained under flux, vacuum head recovers excess flux. Machine travels toward rear in this view

through flexible steel tubes to the welding head as detailed in Fig. 6. No arc is visible and the entire welding operation may be observed except that the actual weld is covered by the flux. A suction hose travels along over the welded seam to recover any unused flux. Welds may be made up to 78 feet, the maximum length of a center sill on any car. Two jigs are provided for this work.

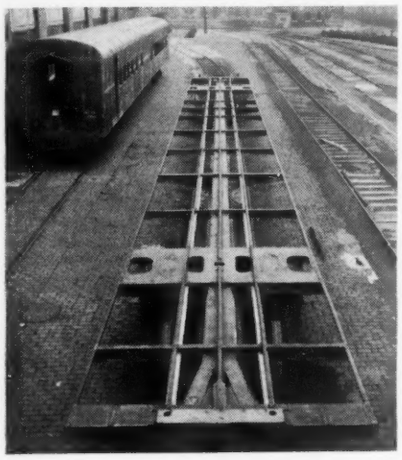


Fig. 7—Typical underframe for lightweight alloy steel car, entirely welded

Tests are still being made on materials, design and welding settings in an effort to produce a still better and more economical car by welding. In many cases the work must be varied to meet particular requirements for use or specifications of the purchaser which interfere with the standardization and the economies of mass production.

Designs Electrode for Welding Alloy Steel

■ Harnischfeger Corp., Milwaukee, announces Smootharc "Har-Ten," a new welding electrode designed for welding Man-Ten, Cor-Ten, High-Steel, Republic Double Strength Yoloy, etc. Base metal of this electrode contains alloying elements which cause hardness and ultimate strength of weld metal to increase during heat treatment. Tests show treatment for one hour at 950 degrees Fahr. to increase yield point from 68,500 to 92,500 pounds; ultimate strength from 83,000 to 102,500 pounds; while elongation in 2 inches decreases from 15.5 to 14.8 per cent.

This rod is made in two types—"A" for flat, vertical and overhead work and "B" for flat work only. Both are available from ⅛ to ¼-inch in diameter in 14-inch lengths.

Welder Uses Air Unloader

■ AT DELCO-BRAKE division of General Motors Corp., Dayton, O., a rather unusual setup is used in connection with a resistance welder. This machine has six stations which index consecutively under the welding head. Parts welded consist of a formed outer cover and toothed hub washer which are welded together by electric resistance projection welding, the projections being formed on the bottom of the cover washer. The assembly forms part of the hydraulic operating mechanism used to convert hydraulic power into mechanical motion to operate brakes on automobiles made by General Motors.

In original setup, operator placed the two parts forming each of these sub-assemblies into one of six cup-shaped stations on the welder and also removed the welded parts from other stations after rotating under the welding head. However, in an effort to help the operator keep up with the automatic cycle of the index and reduce fatigue various methods for automatically unloading these fixtures were tried. The final arrangement is shown in the accompanying illustration.

As the welded assembly rotates to the unloading position, a plunger comes up from below and tilts it up out of the cup-shaped welding station. An electrically operated air valve is connected to welder control so simultaneously with flow of welding current a blast of air is released through the curved tube shown in the illustration. The opening in the air tube is about ¼-inch in diameter. This tube is placed in such a position as to pick up the welded piece and throw it into the container at the left of the operator. Distance from welding station to container is about 2 feet. Placing of air tube, pressure and length of blast have been worked out so it is very rare that a piece is not delivered into the container.

This automatic unloading device made possible the shortening of the index cycle increasing the output with less fatigue on the part of the operator. Pieces handled by the pneumatic unloader weigh about 2 ounces each and are of hot-rolled steel stock. Production of the machine now averages 2000 completed pieces per hour.

Resistance welder has six heads which index. Air unloader helps operator keep up with automatic indexing cycle

Cruiser Fastened With Stainless Steel

■ Increasingly important role of alloy steels in marine design is seen in an interesting application of stainless steel in a 46-foot sport cruiser now being built. In the knowledge of its designer, John L. Hacker, Detroit, this is the first power boat to be completely fastened with stainless steel. All bolts and screws used in its construction thus are rustproof.

Stainless steel also is used in the galley sink and in the aft bathroom which is equipped with a stainless steel shower bath.

Novel Stamping Setup

Simplicity of plant layout and flexibility of equipment arrangement facilitate handling of pieces through various presses and onto conveyors in De Soto plant

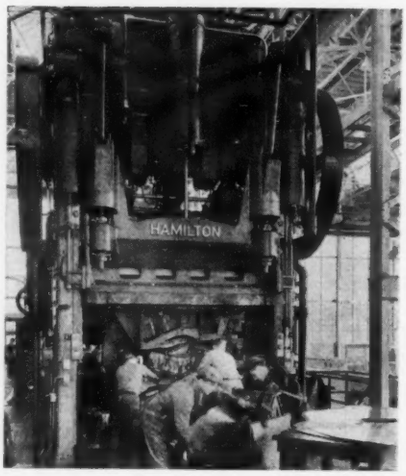
By J. F. HUGHES
Superintendent, Press plant
DeSoto division, Chrysler Corp.,
Detroit

■ INTEGRATION of automobile manufacturing is bringing more and more actual parts production under the direction of the car builder. In recent years supply of steel stampings, so vital an element in any modern automobile, has been coming under the wing of the producer, and several large stamping plants have been built for this purpose.

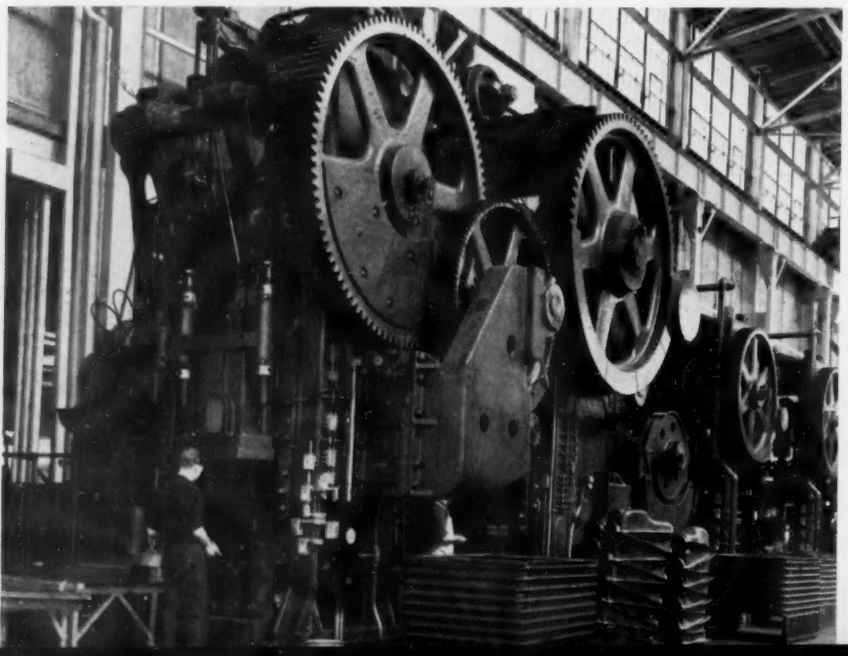
One of the latest additions and one which typifies many of the newest ideas in stamping practice is the plant of DeSoto division of Chrysler Corp., Detroit, devoted entirely to production and assembly of stamped steel parts, including fenders, radiator shells, hood tops, hood sides and a wide variety of brackets, reinforcing strips and similar members going into bodies and chassis of Chrysler Corp. lines.

The building itself is simple. It recently was awarded first prize in an architectural contest for the best use of glass in industrial buildings, total glass area in the structure being 90,000 square feet, or 52 per cent of the wall and ceiling area. This feature, combined with high-intensity lighting of the interior, provides ideal working conditions.

The plant may be divided generally into two main divisions, light and heavy stamping. Nine rows of heavy presses are arranged in bays at one end of the 644 by 237-foot building. A railroad siding extends the length of the building on the inside and accommodates nine freight cars. Enclosing the siding is a 77-foot bay, an integral part of the structure, which serves as a loading and unloading dock. At one end, bundles of sheet steel are unloaded, weighed and moved across the dock directly into presses. At the other end an overhead chain conveyor brings finished parts and assemblies alongside the cars and loads them with little lost motion. Weighing bundles of sheets is accomplished by means of a crane equipped with a scale and automatic "print-weight" device; sheet metal bundles are all wrapped in heavy kraft paper which is not



Start of press line for radiator shell stampings, with workmen giving sheet preliminary bend before the first draw



These presses form 280 oil pans per hour. Blanks are given a draw in the first press and are fed through subsequent steps, with finished pieces coming off the rear. Untrimmed pans are shown in right foreground

removed until steel is ready for use.

At the opposite end from the heavy press department are seven transverse conveyor tables, flanked by benches, small presses, welders and other equipment incidental to finishing and assembling various stamped units.

Considerable interest attaches to the heavy press department by virtue of the flexibility of equipment arrangement and facility with which pieces are handled through various presses and onto conveyors. This section of the plant has a 16-foot basement, as shown in an accompanying illustration, with rows of concrete piers for supporting I-beams which carry presses and plant floor. From the illustration it can be noted how short cross I-beams rest on the longer beams supported on the piers. These short beams may be moved to any point along the supporting beams, thus permitting presses to be spotted at any convenient point along bay. The floor is carried on still other lighter I-beams and is made in sections so it may be taken up quickly and relocated when changing press setup.

This arrangement also permits ready access to press bases, air cylinders and other portions extending below floor level. The presses, being carried on their own foundation piers, provide less vibration and possible damage to the building itself. Furthermore, cleanliness is improved over older methods of press installation.

Stored in Basement

As yet all bays in the heavy press section have not been filled, so in the two end bays the floor is left off, providing access to the basement, an ideal place for die storage. Dies will continue to be stored in the basement even when press bays are full, as floor is removable and a special high-lift truck can be used to transfer dies from the basement to the working level.

Following through the sequence of operations on a typical part in the heavy press department, take the oil pan line which turns out 280 pieces per hour. A flat sheet of 13-gage steel is fed to a blanking press where three blanks are made from a single sheet. Blanks then pass through tallow rolls to receive drawing compound. Press operations include: Draw, size, trim end flange, punch drain hole, punch locating marks for baffle plates, turn end flange, flange drain nut hole, weld baffle plates in position. An accompanying illustration shows line of presses doing these operations, that in foreground being the first draw press. Piece is fed through from press to press, operators taking it from rear of one and feeding it into the front of the next press.

Lubrication Controlled

The illustration shows the centralized lubrication setup used on all presses, with sight gages which give instant indication of amount of lubricant at all bearings. A lubrication engineer watches these gages and sees that press is well lubricated at all times. It is usually necessary to apply lubricant about once per day.

Presses are provided with control buttons at all four corners, arranged so actuation of any number of buttons may be required to operate the press. The third button visible in the foreground of the illustration is an "inching" control for use of die setters when press is being set up for operation.

Another interesting "line" setup is that for stamping hood tops. Of 20-gage steel, stock is first put through squaring shears, then a roller leveler and onto an inclined ball conveyor table. From the latter, two roller conveyors Y—out to two adjacent lines of presses, one for the right-hand tops and the other for the left-hand tops.

Press operations are: Draw, trim, flange, form hinges and hem, pierce holes in flange, and curl outer flange. Thus six presses are required in each line. Formed tops are hung on conveyor hooks after final operation and transferred to the other end of building for metal finishing and shipping. Tops are completed at a rate of 275 sets per hour.

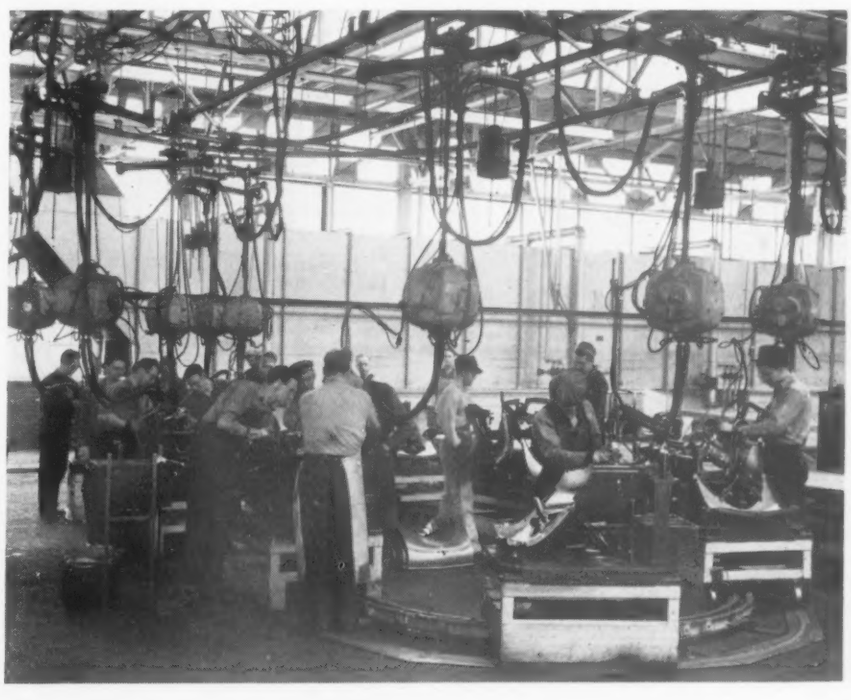
Hood side panels follow a similar sequence of operations—blank, roller level, draw sides, trim sides, flange, hem edges and pierce flanges. By hemming is meant the folding over of a small portion of the edge of the sheet.

Large double-crank presses are used to blank fender stock, while the draw is made on a toggle press 132 inches between uprights. After fenders are drawn, they are trimmed on a third press, and then pass through three clearing presses for further trim on the nose and sides, flanging, "spanking" the head, and piercing holes and bumper cutout.

For handling stampings from press department to metal finishing department there is a 1200-foot closed loop overhead conveyor, provided with both hooks and baskets. Parts with holes stamped in them can be placed on hooks; others in baskets. This conveyor travels past delivery side of the various press lines, then traverses the complete length of building and back again, parts being taken off as they pass the previously mentioned slat conveyor tables which run crosswise to the building.

Flanking these six conveyors, all of which are at working height, are batteries of small presses, spot welders, polish jacks and other equipment required by the finishing operations.

An interesting feature of one battery of small inclined presses is an arrangement for blowing stamped parts from dies by compressed air. For example, baffle plates installed in the oil pan stamping, weighing



Merry-go-round assembly track for joining upper and lower radiator shells. Eight welders and eight assembly fixtures are used, production approximating 225 per hour

View in basement of plant, showing how presses are carried on I-beams resting on separate foundation piers. Flooring is carried on smaller beams

about 1 pound each, are produced on these small presses, and by means of a cam arrangement on the press flywheel, an air valve is released at a certain point in every stroke of the press. Air is directed through a small pipe against side of die at such an angle that the stamped piece will be lifted out of lower die by the blast of air, falling down a chute at the rear of the press. Production is greatly speeded up by this means, and operator fatigue lessened. The idea is used in a number of other automotive stamping plants.

Weld on "Merry-Go-Round"

Also located in this section of the plant is a "merry-go-round" assembly station for spot welding upper and lower radiator shells, shown in an accompanying illustration. Welding transformers are supported by carriages traveling on overhead monorails, cables leading down to the welding guns, four on the inside of the track and four on the outside. Eight fixtures travel around track, and shells are welded at a rate of 225 per hour. About 16 operators work on the line at a time, loading and unloading, and operating the welders.

As finished and assembled units reach end of slat conveyors they are hung on another closed-loop overhead conveyor, this one about 750 feet in length, which carries parts through an oil spray machine and then alongside the shipping dock where pieces are loaded into cars for shipment to various Chrysler assembly plants.

Freight cars for shipping these stampings are equipped with heavy steel plates on the interior sides which have regularly spaced holes permitting installation of crossbars to hold stampings in a racked position.

Equipment of this DeSoto stamping plant is still going ahead, and there remains ample room for additional presses in the press department, together with an extensive area at the other end for additional special equipment required, such as power hammers and clinching machines for spotting nuts on stamped brackets. At present, 11 new fender presses are going into two bays at the extreme end.

A further sidelight on the novel arrangement of the plant is the location of locker and washrooms for employes on a second floor above the engineering department, superintendent's office and other smaller offices situated centrally in the plant, on the ground floor. Thus, men coming to work go directly up a ramp to locker rooms, and then come down inside the plant to their jobs, thereby avoiding cluttering up working space with clothing and other effects of employes. At the same time added protection is given to the men's belongings.

Determination of Oxygen Content Studied

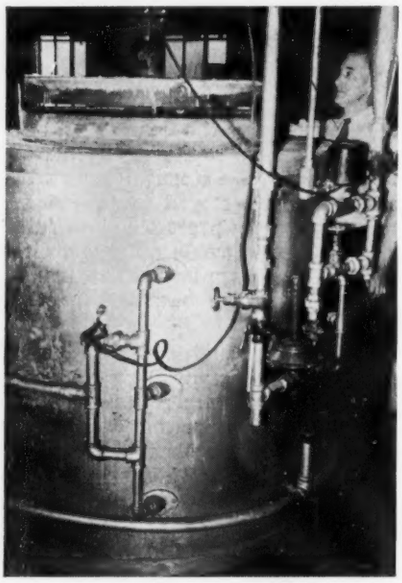
■ Recent study, made by John G. Thompson and Vernon C. F. Holm of the metallurgy division of the national bureau of standards, Washington, of the Brower, Larsen and Shenk modification of the hydrogen-reduction method for determination of oxygen in steel, revealed that the method yielded accurate values for the total oxygen content of several plain carbon steels, including steels that contained small amounts of alumina and silica, but yielded low results when larger amounts of alumina were present. The method proved inapplicable to the determination of the oxygen content of open-hearth iron because of inability to separate surface and body oxygen in this material.

Glass Material Covers Magnet Wire

■ Described by its manufacturers as the first inorganic textile, a new material made of glass is used by Anaconda Wire & Cable Co., New York, in covering magnet wire and coils.

In appearance insulation resembles silk. Its dielectric strength and insulation resistance are high and not seriously affected by high temperature or high relative humidity. Insulation is mechanically strong and wires can be wound into coils by same methods used for other magnet wires. Space occupied by this type of wire is less than that needed for double cotton of same gage.

Batch Annealing



■ **F. A. Harris Inc., Springfield, Mass. uses this gas furnace in batch annealing of nonferrous and alloy wires. It features a series of U-shaped tray sections with tapering tunnels which intensify entrainment of furnace atmosphere with newly burned gases. Removable tuyere blocks and a supplementary bottom are employed also. Photo courtesy American Gas Association, New York**

Special Equipment Car Improves Scrapping

■TO SIMPLIFY its scrap cutting activities one steel company has constructed a specially equipped railroad car which can be readily moved to any point in the yard to provide ample quantities of oxygen and acetylene for any amount of cutting. This unique arangement has resulted in a marked increase in the efficiency of scrap cutting.

Scrap-cutting car is moved by a switching locomotive to a point in the yard near the cutting operation. Operators then take cutting blowpipes and hose from an outlet box beneath the car and proceed to their respective jobs, as many as four operators working at one time from one side of the car. When short moves are made, the hose and blowpipe are not put back in the outlet box but are hung from hooks on side of car.

Referring to accompanying sketch, generator room will be seen at left end of the car. Here are the generator and carbide drums with the necessary tools and equipment.

Walls, floor and roof were constructed by welding. There are four windows in the room, the frames being welded to the car. The generator is located opposite the door and is bolted securely to the floor. Steps and platform have been installed to provide easy access for charging, cleaning and inspection.

Oxygen storage and manifold room is in middle of car and consists of two sections, one for storage of oxygen cylinders and the other for a 20-cylinder oxygen manifold.

After cylinders have been attached to manifold, they are strapped securely in place by a cable. This cable has a turnbuckle at each end and passes through hooks placed between cylinders. When drawn up tight by the turnbuckles, the cable holds cylinders tightly in their rack and all vibration is eliminated.

Locker room for operators is located at opposite end of car from the generator room. In top of locker room is a 1000-gallon water tank, enough water for six charges of the generator and for flushing. The water heater in addition to supplying hot water heats the entire car in cold weather. Pipes go from the heater, through the oxygen manifold room and into heating coils in the generator room.

Outlet Boxes Under Car

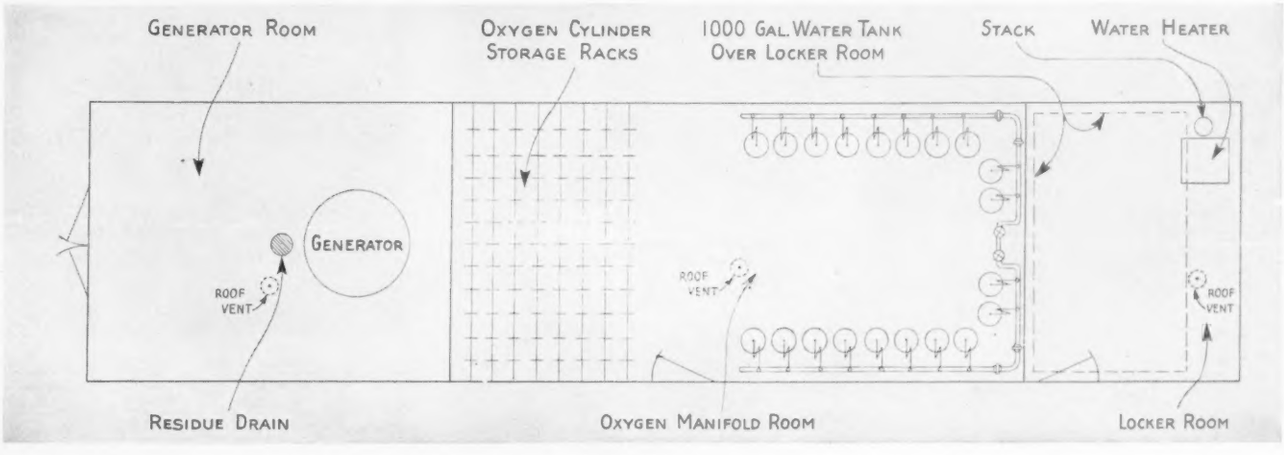
Outlet boxes, one under each side of the car, contain oxygen and acetylene outlets for attaching regulators. The acetylene, upon leaving the generator, is taken by a 1-inch pipe to the outlet box where the 1-inch pipe acts as a header with four nipples branching off, each nipple having an adaptor for attaching a station regulator.

The oxygen, upon leaving the manifold, is taken by a ½-inch pipe through a 250-pound angle globe valve before entering the outlet box. Within the outlet box, the ½-inch pipe also acts as a header to which are attached the station oxygen regulators. Since operators work on only one side of car at a time, four oxygen and four acetylene regulators are the most that are ever needed. When changing cutting operations to other side of car, operators merely move their regulators to the opposite outlet connections.

The steel mill has found this piece of equipment indispensable in its scrapping operations and the resultant saving over former practices have many times repaid the cost of constructing the car.

Any plant contemplating construction and use of cars, trucks or wagons for housing and conveying acetylene generators, oxygen manifolds, and similar equipment, should take up the design and proposed usage with local authorities and insuring organizations.

This sketch shows interior plan of scrap cutting car. Photo courtesy The Linde Air Products Co., New York



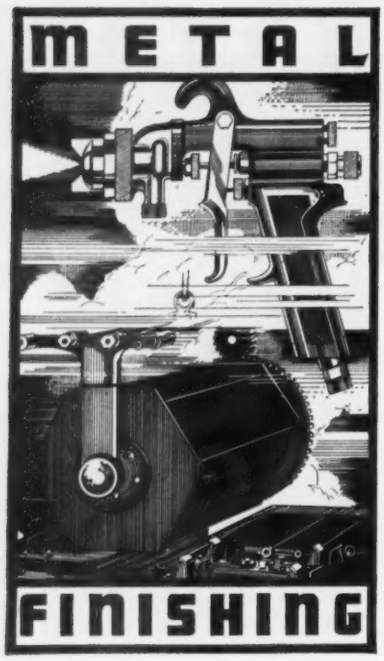
Device Eliminates Manual Charging Box Operation

■ Wellman Engineering Co., Cleveland, has recently built three 12-ton open-hearth charging machines equipped with an electric lock-rod operating device patented by F. H. H. Foss. This equipment locks the charging box to the ram head and after contents have been discharged positively releases the box. As it is electrically operated, it entirely eliminates operator fatigue and loss of boxes.

While the device can be installed on old machines, it is more easily incorporated in the design of new machines. It is so constructed that should anything happen to cause the electrical device to become temporarily inoperative, it can be manually operated.

Develops Impregnating Resin for Castings

■ High liquid or gaseous pressure can be easily withstood by castings of the proper alloy. However, to get chemical resistance or other qualities desired, sometimes the casting may not be absolutely nonporous. General Plastics, North Tonawanda, N. Y., announces type 278 impregnating resin which has been used successfully by several foundries to overcome any slight porosity of castings. Pressure or vacuum and pressure are used in impregnating the castings.



Bright Nickel Plating

Process produces economies in manufacture of flat irons by eliminating the buffing operation prior to chromium plating and spoilage caused by cutting through plate

■ AMONG THE bright plating finishes recently developed is the process perfected by Seymour Mfg. Co., Seymour, Conn. Bright nickel plate is secured from standard Watt's baths by means of certain addition agents. The process produces a brilliant plate of nickel, said to be soft, ductile and to require a minimum of control. Also freedom from pitting and ease of operation are claimed.

By this process, bright nickel may be deposited on steel or ferrous alloys either directly or over copper plate. It also deposits on brass and other nonferrous alloys as well as on die-cast zinc-base alloys previously plated with copper or dull nickel. No special preparation of the base metal is necessary other than a suitable high finish. Seymour bright nickel is not passive and can be chromium plated without activation or color buffing. In addition, it does not tarnish readily.

The process is said to have a number of advantages chief of which probably is the elimination of finishing operations before chromium plating. Thus it is economical since no finishing need be done prior to chromium plating. Also this means the plating can be built up safely to specifications as none will be lost through buffing. Too, any spoiled work due to cutting through the plate is eliminated.

Fig. 1—Blanking and forming upper shell of flat iron

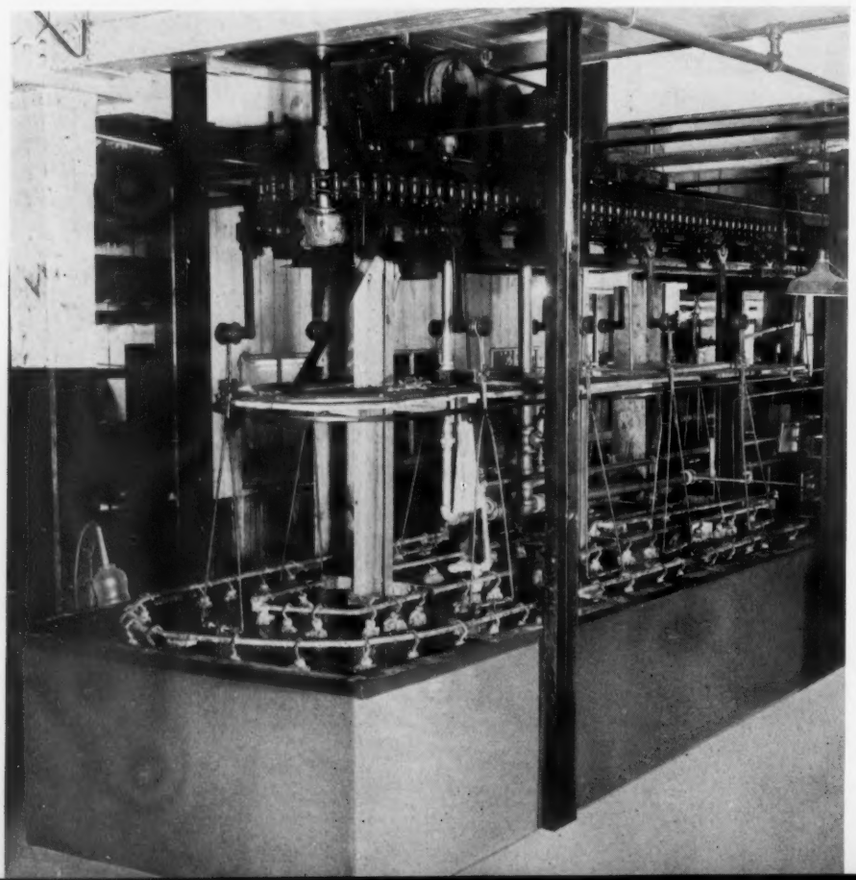


Fig. 2—Automatic plating of bright nickel by Seymour process at plant of Fitzgerald Mfg. Co., Winsted, Conn.

Base metals having an acceptable finish may be bright nickel plated by this process directly, thus eliminating all polishing operations. Bright nickel deposited on smooth lustrous copper deposits requires no finishing operation afterward. Zinc-base die castings are bright nickel plated in this manner by the Seymour process. In general, articles plated with Seymour bright nickel may be chromium plated without being removed from the original racks.

Fitzgerald Mfg. Co., Winsted, Conn., is utilizing this process as

Fig. 3—Polishing shells after stamping and prior to application of copper plate

shown by accompanying illustrations. Fig. 1 is the first step in producing the top shell of a flat iron. Here the shell is being blanked out of a steel strip and formed to shape. The operator is holding a shell in his right hand while pulling the strip through the press by the skeleton in his left hand.

Polished Before Plating

In Fig. 3, the stamped shell is being polished to provide a smooth surface for the plating. These shells are given a copper plate in equipment shown in Fig. 4 prior to application of bright nickel. After copper plating, the articles are buffed lightly and then passed on to the Seymour bright nickel plating bath shown in Fig. 2. This is a steel tank, rubber lined.

As will be noted in Figs. 2, 4 and 5, this plating equipment is part of a complete automatic system which carries the articles from bath to bath. As they proceed through the various operations, the racks on which the shells are mounted are lifted out of one tank and immersed

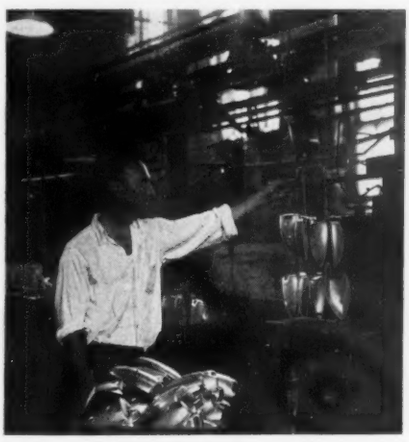


Fig. 4—Removing copper plated shells for buffing prior to bright nickel plating

in the following tank automatically by means of cranks with gears which engage stationary gear racks. As a moving arm with its gear engages a gear rack, the arm is lifted up, swung over and lowered into the adjacent tank as the carriers proceed down the chain conveyor. This facilitates the plating work and makes possible as many rinses or dips as may be desired, all handled automatically on the one chain conveyor line.

Solution used in Seymour bright nickel plating is made originally by the addition of a brightener make-up solution to a purified Watt's bath. The amount necessary for conversion is 2 per cent by volume of the plating bath. Solution for this process is really a number of solutions. The main solution, known

Fig. 5—Shells emerging from bright-nickel tank proceed directly to chromium plating without buffing or removing from racks

as Brightener Make-up, is used originally in making up the bath. Brightness of the plate is maintained by brightness solution No. 1 which is used to replenish the bath. The need for the addition of this solution is determined by chemical control or visually, as desired. Concentration of ingredients in the bath can be kept correct through accurate control methods which are available for use with this process.

A third solution, known as Anti-Pit No. 2, is added in amounts of 1 pint to 100 gallons in case pitting occurs from some cause other than too low a hydrogen ion concentration which is kept below 4.5 for best results. Also the surface tension of the bath is kept between 32 and 37 dynes per centimeter, as determined by a stalagmometer, by addition of Anti-Pit No. 2. Both the amount of brightness solution and Anti-Pit No. 2 required depends upon the current densities and volume of work handled.

A fourth solution is used to replace ingredients lost through drag-out and not added through ordinary replenishment. It is known as maintenance solution No. 3. Use of this solution is seldom necessary but is required by certain types of work. It is used only when indicated by the Seymour control laboratory. All solutions when added are first diluted with approximately ten times their volume of plating solution.

The Seymour process solution appears stable and to have good throwing power. It produces a bright plate at all thicknesses of deposit. No agitation is required, nor any circulation of solution. The process may be used with equal success in still tanks or with automatic plating equipment.

Another feature is the successful nickel plating of deeply recessed articles due to throwing power of the Seymour bright nickel solution. This is an important advantage as chromium plates with more ease over bright nickel than over buffed nickel. Also bright nickel eliminates need for the formerly difficult buffing work on such recesses.

Purified Solution Used

Ingredients for Seymour process are added only to a purified and filtered Watt's solution. Before conversion of the bath to the Seymour process, the solution should be purified to remove copper, iron, etc., which are harmful. Bath then is heated to at least 150 degrees Fahr. and for each 100 gallons of solution, 5 pounds of lime made into a thin paste with water are stirred into the tank. After agitating for 30 minutes, a sample is taken, filtered,

Fig. 6—Here shells with other parts are being assembled to form the completed flat iron All photos courtesy Fitzgerald Mfg. Co., Winsted, Conn.

cooled and the hydrogen ion concentration read. If not above 6.5 quinhydrone, more lime is added. After an hour at 150 degrees, 32 ounces of 100-volume hydrogen peroxide is added for each 100 gallons of bath and stirred. After settling overnight

in a separate tank, solution is filtered into a clean plating tank. Temperature is adjusted to 110 degrees and pH to 2.8 quinhydrone. Use of ammonia salts is not recommended and adjustment of pH is made with sulphuric acid or nickel carbonate.

Anodes used here are made especially for this service. Known as Seycast anodes, they are the 99 per cent plus, pure nickel type and are cast elliptical. Bags are usually employed with these anodes.

Eliminates Buffing

Use of this process at Fitzgerald Mfg. Co. entirely eliminates necessity of buffing or "coloring" between application of the nickel and chromium plates. The flat-iron shells proceed directly on the chain conveyor after bright nickel plating through rinses and on to the chromium plating baths without removal from the racks. This has shown a significant saving in cost of finishing these articles.

Fig. 5 shows the flat-iron shells after application of the bright nickel plating in the equipment shown in Fig. 2. Articles are emerging from the bright nickel solution and will go to rinses and chromium plating equipment for final plate.

Subsequently, the shells are assembled with other parts of the flat irons as shown in Fig. 6. Thus steps in finishing these shells include stamping, polishing, copper plating, buffing copper, bright nickel plating, chromium plating and final assembly.

Glittering Decoys

■ A trolling spoon made of Armco enameling iron with a fused coating of gleaming porcelain enamel has been introduced by Porcelure Fishing Equipment Co., San Leandro, Calif. The spoons come in four sizes and are colored to represent sardines, goldfish and white redheads. The manufacturers guarantee the spoons against scratching, fading or tarnishing. Both a stunned fish action and a steady glitter and gleam of the scales and eyes tend to decoy the game fish. Photo courtesy American Rolling Mill Co., Middletown, O.

Metals Section of Safety Council To Review Steelmaking Practices

■ Safety in operation of blast furnaces, bessemer converters and open hearths, rolling mills and foundries, will feature the sessions of the Metals section, American Safety council, at the Stevens hotel, Chicago, Oct. 10-13, in connection with the council's silver jubilee safety congress. Metals section will be celebrating its twenty-second anniversary.

Sessions will occupy the time of three afternoons; the second afternoon will be left open for a meeting of the railway car builders' committee, under chairmanship of P. J. Brand, director of safety, Pullman-Standard Car Mfg. Co., Chicago. R. A. Chaffin, Continental Steel Corp., Kokomo, Ind., is general chairman of the Metals section, and H. J. Griffith, Jones & Laughlin Steel Corp., Pittsburgh, is secretary.

Details of technical sessions follow:

Monday, Oct. 10

AFTERNOON

"Safe Practices in Blast Furnace Operations":
- "In Handling Ore, Stone and Coke from Dock to Furnace," by Harry Strain, assistant general superintendent, South works, Carnegie-Illinois Steel Corp., South Chicago, Ill.
- "In Cast House and Pig Machine Operations," by George T. Williams, superintendent, blast furnace and coke plant, Youngstown Sheet & Tube Co., East Chicago, Ind.
- "In Transportation of Hot Metal," by H. C. Pringle, vice president and superintendent, Monongahela Connecting Railroad Co., Pittsburgh.
- "In Blast Furnace Maintenance," by F. J. Geyer, mechanical foreman, blast furnace department, Inland Steel Co., Indiana Harbor, Ind.

Election of officers.

"Overcoming Hazards Encountered while Handling Materials":
- "In Fabricating Plants," by Edward Mandry, manager, industrial relations, Truscon Steel Co., Youngstown, O.
- "In Heavy Machinery Manufacturing," by Irvin A. Brickman, peresonnel director, Mackintosh-Hemphill Co., Pittsburgh.

Wednesday, Oct. 12

AFTERNOON

"Safe Practices in Open Hearth and Foundry Operations":
- "In Storing, Preparing, Loading and Shipping Scrap and Raw Materials," by G. E. Vosper, stock house foreman, Wheeling Steel Corp., Steubenville works, Steubenville, O.
- "On the Charging Floor," by David G. Forrest, superintendent, open-hearth department, Republic Steel Corp., South Chicago, Ill.
- "In Tapping an Open-Hearth Furnace," by M. V. Appleman, director of safety, Ohio works, Carnegie-Illinois Steel Corp., Youngstown, O.
- "While Pouring Steel," by W. P. Albaugh, superintendent of open hearth, Ashland division, American Rolling Mill Co., Ashland, Ky.
- "On the Pit Side," by A. P. Miller, assistant general superintendent, Inland Steel Co., East Chicago, Ind.
- "In Preparing and Stripping Molds," by D. R. Loughrey, assistant superintendent, bessemer and open hearth department, Jones & Laughlin Steel Corp., Pittsburgh works, Pittsburgh.
- "In Open Hearth Maintenance," by C. W. Philips, general master mechanic, Cleveland district, Republic Steel Corp., Cleveland.
- "Co-ordinating Safe Practices of the Contractor and Purchaser while on Company Property," by C. E. Ralston, safety director, Pittsburgh Plate Glass Co., Pittsburgh.
- "Our Experience with and Industrial Health Program," by Dr. A. G. Kammer, chief of examining clinic, Inland Steel Co., Indiana Harbor, Ind.

Thursday, Oct. 13

AFTERNOON

"Rolling Mills";
- "Safe Practices in Heating Furnace Operations," by Hayes N. Holstein, superintendent, blooming, bar and jobbing mill, Ashland division, American Rolling Mill Co., Ashland, Ky.
- "Safe Practices in Blooming and Bar Mill Operations," by S. M. Jenks, assistant general superintendent, Gary works, Carnegie-Illinois Steel Corp., Gary, Ind.

"Safety Problems in Steel Plant Shipping":
- "Of Sheets and Coils," by A. C. Hughes, superintendent, sheet mill, finishing department, Otis Steel Co., Cleveland.
- "Of Tubing," by H. C. Herpel, manager, industrial relations, National works, National Tube Co., McKeesport, Pa.

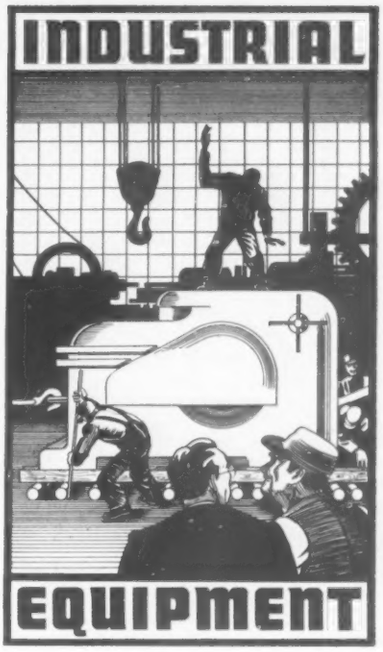
"Safety Problems in Metal Goods Shipping":
- "Finished Products—Bars, Rounds, Sheets, etc.," by A. C. Germain, district safety inspector, American Steel & Wire Co., Cleveland.
- "Handling Scrap," by A. J. Blantz, safety supervisor, Central Alloy district, Republic Steel Corp., Canton, O.

Corrosion Is Compared

■ Special research has been conducted by International Tin Research and Development council of London, England, to compare corrosion of tin with that of iron and of cadmium by oils.

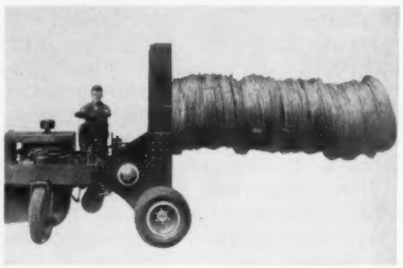
Extremely thin films of the metals volatilized to glass were used for tests and corrosion was estimated by increase in translucence of films. Degree of attack varied with type of oil and amount of water in it.

Results of this research are given in technical publication A.74 of the council, free copies of which may be obtained from L. J. Tavener, 149 Broadway, New York.



Heavy-Duty Ram Truck Performs Various Tasks

■ Howell Industrial Truck Co., 6545 Carnegie avenue, Cleveland, has introduced a heavy-duty pneumatic-tired fork and ram truck for steel mill use. By means of a line of inexpensive attachments the truck



can be converted into a snow plow, sweeping machine, dump truck or crane.

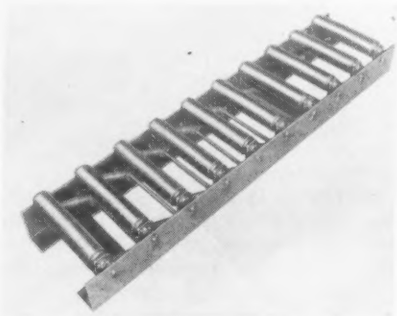
Truck is furnished in two capacities, 5 to 7 tons, and 10 to 12 tons. Ratings apply 36 inches from center line of front axle. A 4000-pound load of rod is being handled by the truck illustrated, but an actual load of 6000 pounds can be carried on a 9-foot ram. Tested for 69 tons capacity, ram is 9¾ inches in diameter.

A caster steering arrangement makes possible full 100 per cent turns. Truck can turn within its own wheelbase, which is 65 inches. Cam and lever steering gear is so connected that, when operator turns wheel hard over to make a left turn, wheel brake is applied to left wheel. Differential permits power to go to right wheel, pivoting truck on left wheel. In steering, operator has complete vision either forward or reverse and can watch his load without hindrance.

Truck is powered by a Chevrolet tractor engine and has a 4-speed truck transmission and tractor differential.

Conveyor Absorbs Loading Shocks

■ Standard Conveyor Co., North St. Paul, Minn., has developed an impact absorbing roller conveyor designed to remove loading shocks from roller bearings and shafts.



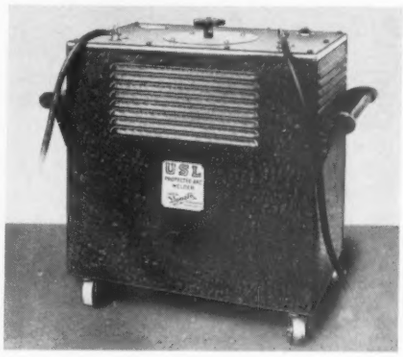
Each roller assembly is mounted in a set of steel arms pivoting on a shaft extending through arms and frame. There are two coil springs, one for each arm, attached at one end to this through shaft and at the other end to a shaft on arms supporting next roller assembly. When load on each roller assembly exceeds rated capacity for which it is set, excess load is transmitted to coil springs.

When heavy irregular commodities are carried and an overload is imposed on a roller assembly, the irregularities cause the roller to depress sufficiently to distribute load over other rollers carrying the commodity.

Single Dial Controls Welder

■ Owen-Dyneto Corp., Syracuse, N. Y., has announced a protected arc alternating current welding machine, characterized by flexibility of operation and simplicity of control.

Rated at 150 amperes, welder is designed to connect to any standard



voltage or frequency power line. It has a range of from 30 to 280 amperes output, an open circuit voltage of 55 volts and maintains from 20 to 30 volts across the arc. Machine will accommodate any commercial alternating current welding rod in sizes from 1/16 to ¼-inch. Constructed to give thorough penetration for heavy work, this welder can be cut down to lower heat requirements for welding thin sheets.

A steady arc is secured by means of a reactor on secondary winding of the transformer. This stabilizer creates a power influx where cycle passes zero point. Single-dial control permits setting machine to requirements at start of work without necessity of further attention. Transformer is constructed of silicon steel and is insulated entirely from welder box. Coils are flat wound copper and are impregnated and baked.

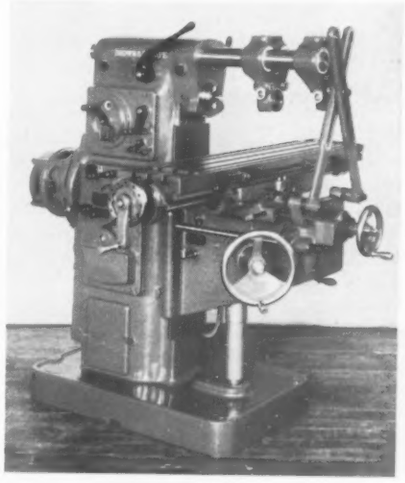
Complete unit is compact and attractive in appearance. It weighs only 190 pounds and may be moved easily on casters.

Milling Machine Feeds Are Automatic

■ Brown & Sharpe Mfg. Co., Providence, R. I., has added to its line two light milling machines to be known as No. 2 universal milling machine and No. 2 plain milling machine.

These units have power fast travel of 76 inches per minute in all directions provided by a constant-speed motor built into right side of knee. Travel is obtained by touching switch button at front of knee. When button is released table resumes its original feed movement. Since power fast travel is independent of both spindle and table feed drives, it is available at all times.

Transverse and vertical adjustment handwheels are each auto-

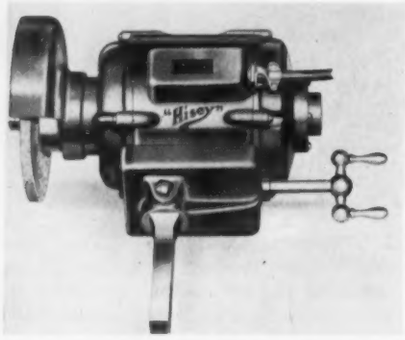


matically disengaged when power feed in respective direction is engaged. For longitudinal adjustments a safety handcrank is provided. Automatic lubrication system provides intermittent oiling for all mechanisms in knee. Table driving mechanisms, ways and bearing surfaces are lubricated at each movement of longitudinal feed engagement lever.

Machines have following capacities: longitudinal feed, 28 inches; transverse feed, 10 inches; vertical feed, 15 inches. All feeds are automatic.

Grinder Has Slide Adjustment

■ Hisey-Wolf Machine Co., Marshall & Colerain avenues, Cincinnati, has introduced a line of electric grinders designed to be attached



to tool post of a lathe, vise of a milling machine, or head of a planer, shaper or boring mill.

Equipped with precision ball bearings throughout, these grinders are driven by ¼ and ½-horsepower commutating type repulsion induction motors. Double locknut construction permits operating machine in either direction of rotation with safety. Other features include heavier spindles, larger wheel arbors, square thread feed screw, external cable connector and horizontal slide adjustment.

Indicates Speed of Control Equipment

■ Reeves Pulley Co., Columbus, Ind., is offering for use with variable speed control equipment a dial type indicator and handwheel combined into a single unit designed to give a more accurate register of speed settings than former indicators.

Actual indication is a definite number of turns of the shifting screw. These are read by operator as he turns dial. Indicator consists of a cast hollow handwheel; a metal cup containing an assembly of pinion and gear and a brass counterbal-

ance; a scale with pointer; and a transparent cellulose lid. Depending upon class of transmission, gear ratios of 25 to 1 and 50 to 1 are available. Where nature of installation requires additional protection, dial may be sealed watertight.

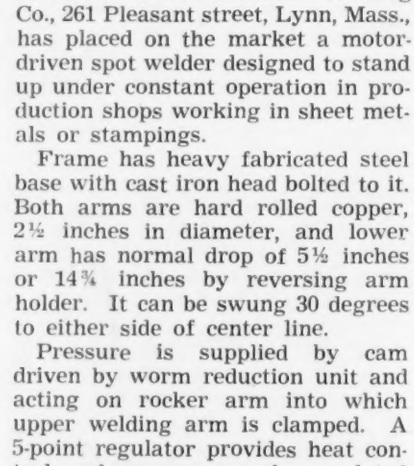
Spot Welder Is Power Driven

■ Thomson-Gibb Electric Welding Co., 261 Pleasant street, Lynn, Mass., has placed on the market a motor-driven spot welder designed to stand up under constant operation in production shops working in sheet metals or stampings.

Frame has heavy fabricated steel base with cast iron head bolted to it. Both arms are hard rolled copper, 2½ inches in diameter, and lower arm has normal drop of 5½ inches or 14¾ inches by reversing arm holder. It can be swung 30 degrees to either side of center line.

Pressure is supplied by cam driven by worm reduction unit and acting on rocker arm into which upper welding arm is clamped. A 5-point regulator provides heat control, and pressure may be regulated from approximately 200 pounds minimum to 800 pounds maximum. Current dwell control is provided by magnetic contactor, limit switch and fan type cam operating in conjunction with pressure cam.

Throat depths of 12, 18 or 24 inches may be had, and transformer



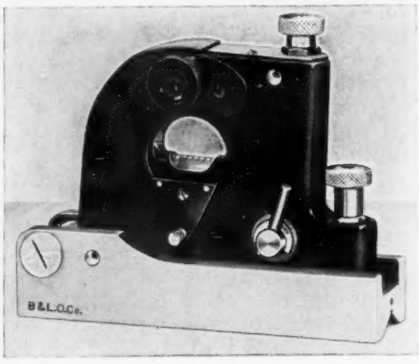
capacities of 20, 30, 40 and 60-kilovolt-amperes are available. Welder is driven by a ½-horsepower motor. Various pulley arrangements give welding speeds of 42, 53, 66, 81, 101 and 127 spots per minute.

Determines Angles Without Calculation

■ Bausch & Lomb Optical Co., 626 St. Paul street, Rochester, N. Y., has devised an improved optical protractor for measuring and checking exact angular relation between surfaces, edges and holes in production work and toolroom application.

Instrument does same work as sine bar, with advantage that it offers direct reading to replace combination of mensuration and calculation. Angles to 1 minute of arc can be read directly, eliminating trigonometrical calculations or reference to handbooks.

Protractor is easy to apply to jigs, fixtures, bench work and sur-



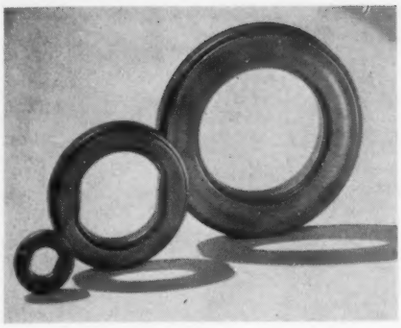
face plates, and is useful for determining tapers, dovetails, grooves and all sloping or angular surfaces.

Base of instrument is adjustable. A ring center revolves, carrying with it a level vial and protractor scale which are viewed through an eyepiece. After base is trued, center ring is revolved by hand or by micrometer screw until required angle appears on scale. Protractor then is placed upon the work, which is turned until level bubble becomes central.

Valve Disk Has Laminated Construction

■ Goetze Gasket & Packing Co., New Brunswick, N. J., has announced a universal, all-purpose disk for handling air, gas, steam and liquids at any temperature or pressure in any service where a globe valve can be used.

Valve disk is of laminated construction, built up of alternating layers of asbestos and metal completely encased in a two-piece shell of copper, monel or other alloy metal. Shell protects laminated parts



of disk and affords perfectly flat seating surfaces. It allows upper ring freedom of movement under compression.

Disks are made in sizes for ¼-inch to 12-inch valves, with round or oblong holes.

Pushbutton Stations Are Explosion-proof

■ Westinghouse Electric & Mfg. Co., Pittsburgh, has developed a line of heavy duty pushbutton stations suitable for use in corrosive atmospheres and in hazardous locations.

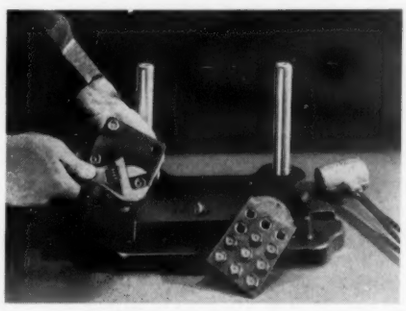
These stations are designed in accordance with requirements of the Underwriters' Laboratories and are explosion-proof either with or without oil in the station. They are available with from one to four standard pushbutton units of momentary contact type, or with maintained contact units.

Stations are high grade cast iron, and all bolts, shafts and fittings are corrosion-resisting copper alloy.

Simplify Transfer Of Blind Screw Holes

■ Nielsen Tool & Die Co., 1861 Gardner avenue, Berkley, Mich., has introduced a line of transfer screws for transferring blind screw holes.

Screws are inserted easily into holes with an adjustable wrench or pliers. Regardless of thread size,

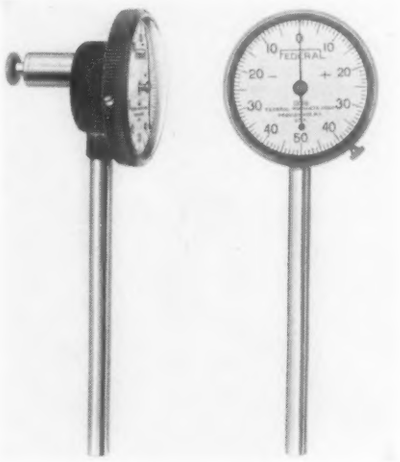


screws are made with heads of uniform height, so that holes of different sizes in the same plane can be transferred at one time. By inserting screws into holes to be transferred, striking section a solid blow, centers and drill circles are obtained, accurately and precisely, sunk into the steel from 0.010 to 0.015-inch. To take care of eventual shrinkage of screw holes, screws are manufactured 0.005-inch under standard pitch diameter.

Indicator Operates On New Gear Principle

■ Federal Products Corp., 1144 Eddy street, Providence, R. I., has developed a perpendicular spindle type indicator for mechanical inspection work in checking dimensions of machined parts.

In this model, which is known as V-8-I, contact point is perpendicular to face of the dial. This permits instrument to be used in positions where regular type indicator is not readily adaptable. A different gear mechanism is required by this new construction. A crown gear is used in place of previous spiral to change direction of gear movement, eliminating much of the friction formerly encountered.



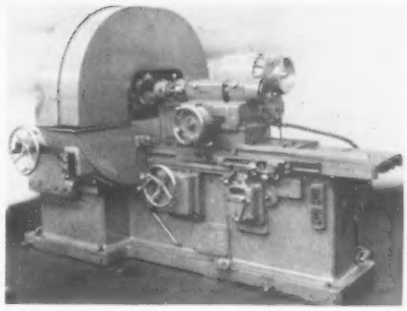
Indicator is fully jeweled and is equipped with self-lubricating bronze bushing in stem through which rack or point spindle operates.

Grinding Machine Has Adjustable Gap

■ Heald Machine Co., Worcester, Mass., has introduced recently an adjustable gap internal grinding machine that will handle large work having swing as great as 42 inches diameter with holes up to 20 inches diameter.

Low work center due to gap design enables this machine to handle such work as gears, plates, connecting rods, housings and similar parts requiring a generous work swing.

This machine's base is a heavy L-head casting giving a large rigid support for workhead and work. End of base is stepped down and



is provided with two carefully scraped flat ways on which a massive bridge holding workhead can be moved to obtain an adjustable gap. Pushbutton control switches for wheelhead and backshaft motors are built into right end of base.

Table is driven by hydraulic arrangement which permits complete control of speeds or direction of movement at all times. Table speeds, varying from zero to 32 feet per minute, are controlled by a throttle at front of machine. Workhead is heavy duty type with large spindle running in anti-friction bearings. A 12-inch diameter flange gives ample support for chucks and fixtures.

Wheel truing device is arranged to be operated so that diamond trues wheel just before finish size is reached. Diamond is brought down into position manually but is raised by a cam.

Mask Lenses Permit Full Vision

■ Acme Protection Equipment Co., 3647 Liberty avenue, Pittsburgh, has received from United States bureau of mines approval of its No. 4 and 4A gas masks for organic vapors.

An outstanding feature of these masks is full vision safety glass lenses, which permit wearer to see as well as he could without a mask. There are dead air check valves on outlet ends of the fresh air ducts which open and close automatically upon inhalation and exhalation, pre-

venting accumulation of exhaled breath in ducts.

Lightweight, all-rubber face piece is molded and cured to master facial contours. No rivets, threads or adhesive tape irritate face, and head harness buckles have no uncomfortable pressure points.

Mask as illustrated, No. 4A, sells for $21.75, complete with one canister in fibre carrying case.

Telemetering System Is Pneumatic

■ Bristol Co., Waterbury, Conn., has developed a pneumatic telemetering system for recording and automatically controlling temperature, flow, pressure and liquid level.

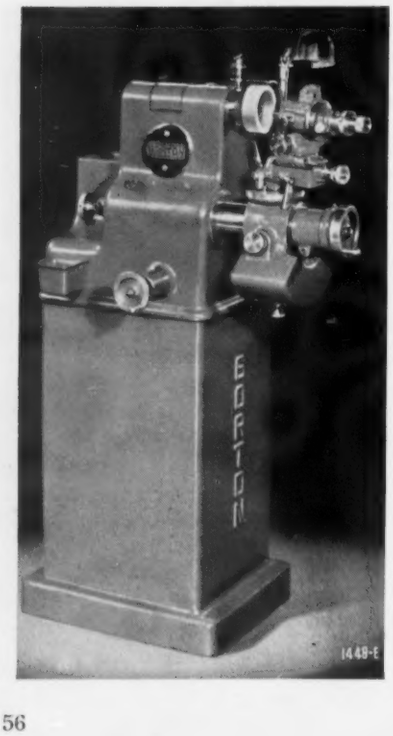
System consists of two instruments, a transmitter and a receiver. Transmitter measures the variable in question, indicates its value on a scale for use of operator and transmits reading to the receiver, which may be several hundred feet away. A 15-pound air supply introduced at transmitter provides power to the telemetering system through a copper tube connecting the two instruments.

Grinds Cutters for Die and Mold Work

■ George Gorton Machine Co., Racine, Wis., has placed on the market a grinder for die and mold cutters, designed particularly for grinding single flute cutters.

Machine will grind other types of small cutters, not over ⅝-inch shank, used in die and mold cutting and pantograph engraving and profiling work. Equipped with universal tool head, this unit will grind cutters to any desired diameter, taper, shape or clearance, with square, conical or ball nose. An index dial and plunger are provided for grinding cutters with 1, 2, 3 or 4 sides, and there are micrometer dials on all adjustments.

Carbide cutters also may be ground in any of the above shapes and sizes on interchangeable diamond impregnated wheels. Straight cup wheels are furnished for single flute cutter grinding, and flaring cup wheels for multiflute and spiral flute cutters.



Pumps Molten Lead

■ Ruthman Machinery Co., Cincinnati, has devised a pump for handling molten solder or hot lead

at a rate of 2000 pounds per minute.

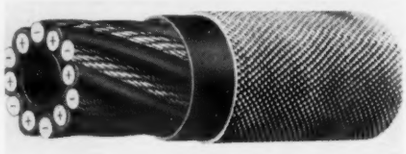
The problem of a heat condition, ranging from 600 to 650 degrees Fahr., is solved by means of a heat dispenser, which consists of a series of aluminum fans, mounted to vertical shaft within an open lantern housing composed of compartments with fins between each. Lower antifriction bearing is mounted within a separate lantern housing 2 inches below motor and directly above heat dispenser. This arrangement is effective in keeping heat from bearings and motor.

Pump is provided with twin intakes, one into eye above and one into eye below impeller and a large passage around impeller chamber. Impeller is small in diameter and has blades specially shaped to handle heavy metals. Capacity with ¾-horsepower motor is 600 pounds per minute, and with 1½-horsepower capacity is 2000 pounds per minute. Volume can be set down to any amount.

In constructioin of pump no packing glands or stuffing boxes are used, and only anti-friction bearings are employed.

Construction Takes Kick Out of Welder Cable

■ Clark Controller Co., 1146 East 152nd street, Cleveland, has placed on the market a water-cooled kickless cable to serve as the electrical



connection between secondary taps of a welder transformer and a portable welder gun.

Cable consists of a central rubber core around which are helically wound flexible, tinned copper cables. For alternate polarity these cables are separated by a corrugated live rubber spacer and are wholly enclosed in a flexible wire and woven fabric reinforced rubber tube. Construction permits circulation of cooling water in direct contact with stranded copper cable and provides necessary flexibility.

With the same value of applied secondary voltage, this cable will deliver more current to the spot than usual separate cables. Approximately 50 per cent reduction in transformer capacity is permitted in securing amperage equal to that provided by two separate cables.

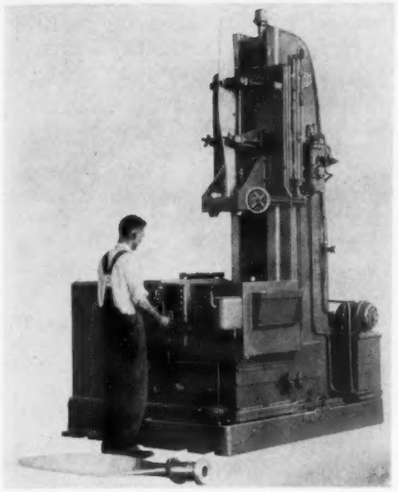
Interweaving of cables of opposite polarity with corrugated rubber spacer causes reactances to neutralize each other, thus eliminating kick or jerking apart. Better welds result because of accuracy with which spots can be placed.

A line of accessories has been developed to increase flexibility of cable's use with welder guns. By hooking a swivel joint to the gun, a sharp angle bend can be obtained without twisting cable severely.

Drills and Reams Propeller Blades

■ National Automatic Tool Co., Richmond, Ind., has developed a deep hole driller to be used by a manufacturer of adjustable pitch airplane propellers for drilling, rough and finish reaming a large tapered hole in hub end of aluminum alloy propeller blades.

Machine is equipped with semiautomatic hydraulic feed, with automatic time delay reverse and positive stop, and second rate feed valve. Three sets of stop dogs, manually placed in operating position, con-



trol lengths of head travel. Spindle speeds can be changed to suit particular tool being used.

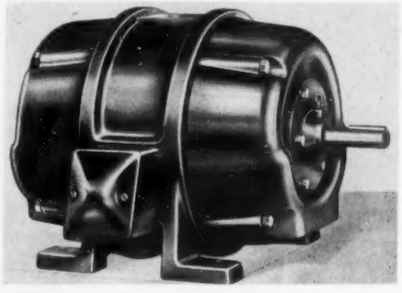
Unloads Sand Without Waste

■ Blaw-Knox Co., 2042 Farmers Bank building, Pittsburgh, has introduced a special roller gate bucket intended to accomplish unloading of fine, dry silica sand from car to storage bin without waste due to bucket leakage or scattering by wind.

Bucket is placed by hook into sand car and there loaded by means of a clamshell. Load then is carried to bin chute and bucket discharged by hand operation of roller gate. Conical shape of bucket and regulation of size of opening assure controlled discharge. Buckets are made in sizes up to 8 cubic yards capacity.

Motors Are Splashproof

■ Diehl Mfg. Co., Elizabethport, N. J., has designed and introduced a line of splashproof motors featuring an effective baffling system



which prevents entrance of water or falling particles.

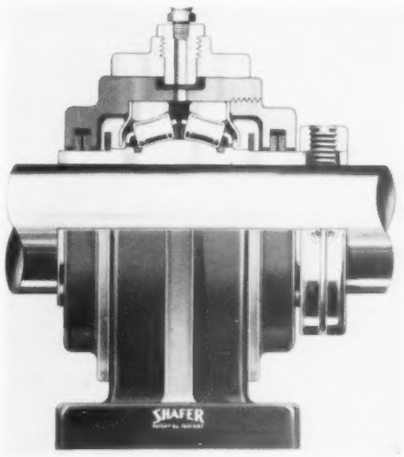
An improved system of ventilation has been built into these motors, assuring low temperature rise. Other features include cast iron construction, specially impregnated windings and sealed ball bearings, accessible for lubrication in all mounting positions.

Sealed Construction Protects Bearings

■ Shafer Bearing Corp., 35 East Wacker drive, Chicago, has developed a line of pillow blocks for heavy duty service embodying welded steel housing construction and sealed protection against severe dirt conditions.

Sealed construction consists of three sealing members. An outer felt of special self-aligning type is free to float in the cover groove, and is always in uniform contact with inner race of bearing under any condition of misalignment. Inner seal plates are mounted between covers and bearing, forming a lubricant chamber. Washers are pressed on inner race, and together with inner seal plates form modified labyrinth seals.

Concave roller bearing design provides inherent self-alignment, and



capacity for radial, thrust, or combination radial-thrust loads. Double row bearings used in seal pillow blocks have extended inner races. Blocks are available in shaft sizes from 1 7/16 to 3 15/16 inches.

Contactors Interlocked

■ General Electric Co., Schenectady, N. Y., has placed on the market a line of combination reversing magnetic switches, employing air circuit breakers, which are intended primarily for full voltage starting of alternating current motors.

Complete device consists of an air circuit breaker, two magnetic contactors, mechanically interlocked, and a temperature overload relay, all enclosed in a sheet metal case for wall mounting. This equipment is particularly suitable for use where short circuit protection for individual motors is desirable and as a means of disconnecting power supply line to switch and motor. It offers the advantage of low maintenance, as breaker can be reclosed readily after it has tripped on short circuit.

Pyrometer Is Self-Contained

■ Pyrometer Instrument Co., 103 Lafayette street, New York, has devised a portable quick-reading pyrometer for all classes of heat control.

Instrument is self-contained and requires no accessories. It is applied like a telescope and can be handled by an ordinary workman. When using this pyrometer, operator can see the object of which temperature is being measured. Instrument gives direct temperature readings, independent of external influences, and has a clamping device to fix pointer at correct temperature. Hardwood carrying case has front and back openings to allow pyrometer to be used without removal.

Two standard double ranges are provided to meet practically all plant requirements: 1000/1800 and 1800/2600 degrees Fahr., and 1400/2400 and 2400/3600 degrees Fahr.

Keeps Out Fumes

■ Binks Mfg. Co., 3114 Carroll avenue, Chicago, is offering a helmet type respirator especially adapted to overhead and outdoor paint spray work.

Mask protects head, neck and shoulders, and is light and easy to wear. Muslin hood, with large pyralin window, is attached to cap and fits snugly over shoulders. By using adjusting valve at back of

helmet, a small amount of air can be brought into respirator through an air connection attached to a length of hose. Air thus brought into mask pushes downward and out, thereby keeping fumes from operator.

List price for complete outfit is $7.50.

Sprays in Any Position

■ Eclipse Air Brush Co., 390 Park Avenue, Newark, N. J., has added to its line a small pressure feed spray unit, intended to fill gap between the cup gun and full-size spray unit.

Available in 1 and 2-quart sizes, this outfit has all refinements of control and adjustment found in larger units; pressure regulator, air gage, shut-off valve on air supply, 3-way release valve and safety valve. Container screws directly into control head. Four feet each of air and fluid hose connect container and gun.

With this unit, gun will spray with full efficiency in any position, including vertical pointing. By separating gun from container it is possible to reach surfaces not accessible to a cup gun. Paints and enamels can be applied successfully at pressures as low as 10 pounds.

Cutters Standardized

■ Ex-Cell-O Corp., 1202 Oakman boulevard, Detroit, has introduced a standard line of tungsten carbide-tipped removable blade milling cutters, embodying the Continental-type RC blade lock.

In blade lock tapered blades fit into accurate seats, blade supports being integral with cutter body. Blades may be adjusted individually any desired amount. Lock facilitates setup or changing of blades, since blades are locked in place in pairs with external clamp requiring only a turn of an Allen wrench to tighten or ease clamp.

Through an error accompanying illustration was shown with description of another item of equipment on page 62 of the August 8 issue of STEEL. It correctly illustrates the above description.

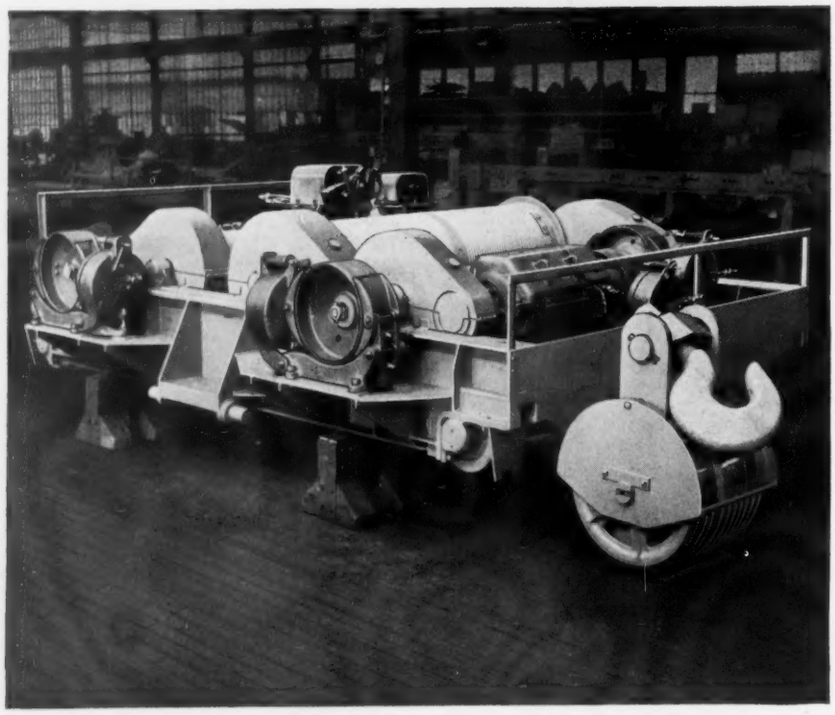
Air Hose Resists Oil

■ Manhattan Rubber Mfg. Division of Raybestos-Manhattan Inc., Passaic, N. J., has developed a new type of air hose for use with compressors and in other service where oil is present in the line.

Because oil as a solvent causes natural rubber to swell and deteriorate rapidly, oilproof synthetic rubber has been used in construction of inner tube of this hose. Sheets of live rubber are vulcanized into one inseparable unit with braids of staple cotton cord to form the outer body, to which a cover of black abrasion-resisting rubber is added. Hose is available in regular sizes from ¼-inch to 2-inch.

CLEVELAND CRANES

All Welded for Every Industry



• The complete trolley for one of several 60 ton—4 motor—20 ton auxiliary 87' span—mill type cranes—delivered to a large steel mill on one order.

ALSO BUILDERS OF

CLEVELAND TRAMRAIL

THE CLEVELAND CRANE & ENGINEERING CO

1125 Depot St.

WICKLIFFE, OHIO

NEW YORK • DETROIT PITTSBURGH • CHICAGO

MATERIALS HANDLING EQUIPMENT

A Container System

(*Concluded from Page 41*)

portance was the introduction of the container system, which now has been extended to cover the major parts of the "unisteel" turret-top Fisher Body—the roof, rear quarter panels, doors, center pillars, cowl and floor.

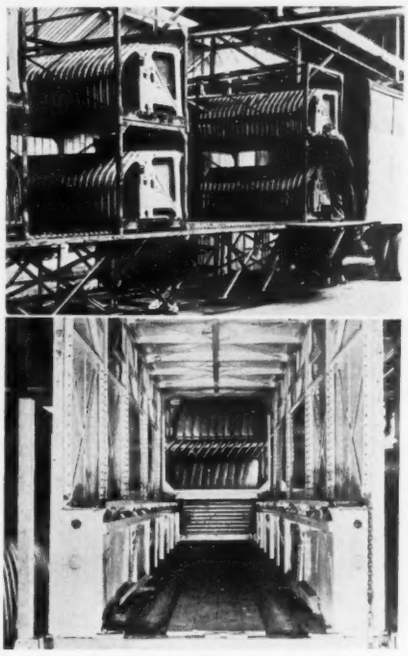


Fig. 8—(Top) Rollers and gravity facilitate unloading tiered container units. Fig. 9—(Bottom) Steel boxes are loaded below, with bulky stamping in containers above

Aside from having niches into which the individual parts fit, the principal feature of these containers is that the legs are designed so they may be nested, one on top of the other, for shipment or storage through the use of telescoping, tiering-type electric trucks. This is shown in Fig. 5. The improvement in method of storing body panels as a result of the new system is graphically shown by a comparison of Figs. 6 and 7.

The containers also are provided with suitable shoes to ride on rollers in the floors of the trailers and at loading and receiving docks as shown in Fig. 8. Thus, the force of gravity may be utilized in loading and unloading operations simply by providing the proper slope to the ramps.

The lo-swung trailer has been found to be particularly adaptable to container use since steel box trucks containing small pieces of material may be loaded below and containers holding bulky stampings above such as illustrated in Fig. 9. With this system, Fisher Body is obtaining approximately a 30 per cent increase in the mileage covered daily by its trailers.

The cost of instituting a nation-wide rail container service, in the opinion of Fisher Body officials, would more than justify itself through increased earnings to the roads. They point out that construction of containers to fit standard box cars is a simple matter, the only alterations necessary to the cars being the provision of suitable channel iron tracks and hold-downs.

♦

Ultrasonic Waves Aid Colloid Manufacture

■ Colloidal graphite of much finer particle size and longer suspension than heretofore available is to be manufactured soon as a result of recent laboratory work. Dr. Karl Sollner, department of Agronomy, Cornell university, has filed patent application and assignment to Acheson Colloids Corp., Port Huron, Mich., covering a method of preparing colloidal solutions of solid substances in liquids by use of ultrasonic waves.

Method involves high-frequency current generator and quartz piezo-electric crystal operating throughout the frequency range from 100,000 to 250,000 cycles per second. Such vibration frequencies were found to disrupt solid particles of a certain form or structure with great efficiency. The new technique is particularly suitable for preparing colloidal dispersions of substances of small cohesion and high cleavage, such as graphite, mica and steatite.

Ethylene Diamine in Copper-Flating Work

■ Tests on use of ethylene diamine in copper-plating baths, indicate solutions of copper sulfate containing sufficient ethylene diamine to produce a clear blue solution do not deposit copper on iron by contact and, therefore, may be used for copper-flashing steel parts, according to Prof. C. J. Brockman and Prof. J. H. Mote, university of Georgia.

The best deposits were obtained at 50 degrees Cent. using current densities from 0.025 to 0.20 amperes per square inch from solutions containing 50 grams per liter of copper sulfate.

Corrosion Committee Issues New Report

■ Fifth report of the joint corrosion committee of the Iron and Steel institute and the British Iron and Steel federation to the Iron and Steel Industrial Research council was recently published at the offices of the Iron and Steel institute, 28 Victoria street, London, S.W.1. It is known as special report No. 21.

Book contains 450 pages and includes details of atmospheric corrosion studies, marine corrosion, laboratory developments and protective coating work. It is complete with tables, illustrations, diagrams and a summary index.

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Open-Hearth Control

(*Concluded from Page 36*)

rises above a safe limit. When temperature falls a certain amount, fuel is turned on again automatically at its former rate.

Over 100 recent installations measure inside roof temperature, at the place where damage actually occurs, by sighting a Rayotube through a hole in the back wall onto the inside of the roof directly above the tapping spout. This method has been adopted on several open-hearth furnaces to operate full proportioning control similar to that used on reheating furnaces or soaking pits. In conjunction with combustion control, fuel and air are regulated automatically to maintain roof temperature at the highest safe maximum from time of melting down to finishing the heat.

Temperature Measured

Temperature of metal in the bath before tapping is indicated by the way a low-carbon bar melts off when placed in the bath or the way metal cools when poured from a test spoon onto the floor. These methods are useful when producing plain carbon steel. However, with special alloy heats actual temperatures of the metal before tapping are desired. A great deal of development work is being carried on to perfect methods and equipment which will measure these temperatures satisfactorily under ordinary open-hearth conditions.

Temperature of checker chambers, determining temperature of combustion-air preheat, is receiving more consideration than formerly. Not so long ago, checker chambers were sealed tightly immediately after rebuilding and given no further attention until some difficulty was noticed in furnace operation. Usually the first effect noticed was the tendency of the furnace to blow out around the doors, especially when burning on one end. This trouble may develop during a single shift, usually the night shift. A casual examination of the checkers, through a peep hole in cold end, may disclose that the front checkers have been overheated—even melted down and fused in a solid mass, blocking up entirely the passages between the checker brick where the waste gases pass out the system. It requires a rebuild to repair the damage.

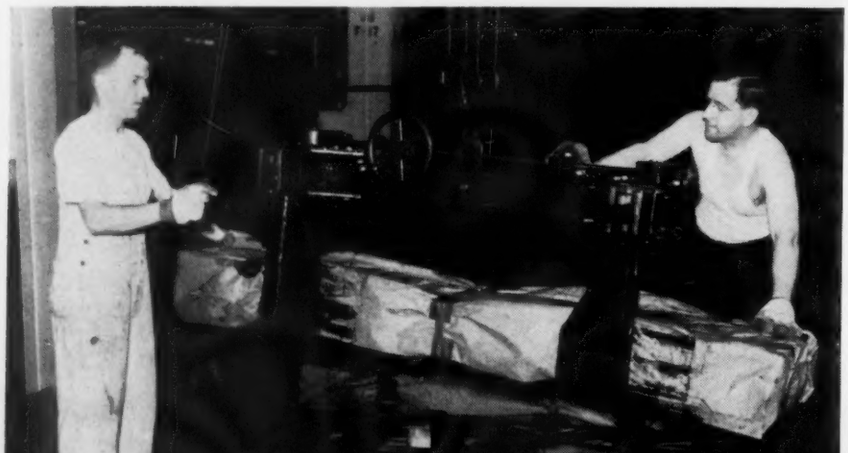
Temperatures in hot end of checker chambers on new furnaces are being measured with Rayotubes. Installation is similar to the back wall installations described under roof temperature measurements. Temperatures in each checker chamber are measured continuously and recorded on the control panel. Thus the first helper is kept informed of temperature conditions in checker chambers without going down into the basement to look through peep holes or waiting until the furnace starts to blow.

It is evident that "steel engineering" in the old open-hearth shop is changing old methods of operating into more scientific methods. The first helper finds himself passing from open-hearth operation "from experience" without the aid of guiding instruments or "tools" to the more scientific method where each operating factor is indicated, recorded and controlled. These changes make possible substantial improvements in furnace operation and increase in efficiency.

In one shop where records were kept of several campaigns before and after using instruments for roof temperature and automatic reversal from temperature-difference, savings of approximately 50 per cent in increased tonnage, 75 per cent in roof life, 50 per cent in life of front wall, and 22 per cent in fuel were made.

Comparing before-and-after costs of operation on a number of installations using various combinations of control instruments, savings averaged 9 per cent in tonnage, 12 per cent in refractories and 8 per cent in fuel.

Speeds Handling of Sheets



A special grab greatly facilitates unloading of sheet steel at Inland Mfg. Co. division of General Motors Corp., Dayton, Ohio. Grab is suspended from overhead jib with electric hoist for lifting sheet. Grab itself is operated by handwheel seen near center of upper beam

Glass Anode Bag for Acid Plating Solutions

■ Because of recent tendency to use hot solutions, high in acid content, in the deposition of smooth nickel plate as an undercoat for chromium plate, it has been necessary to develop bags for the nickel anodes which would resist destructive action of sulphuric acid.

A glass cloth bag for this purpose has been introduced by Hanson-Van Winkle-Munning Co., Matawan, N. J., developed in co-operation with Corning Glass Co. This anode bag is of one-piece, tubular construction, sealed by a special process at one end and protected from ravelling at other end. It is flexible and requires little extra care in handling.

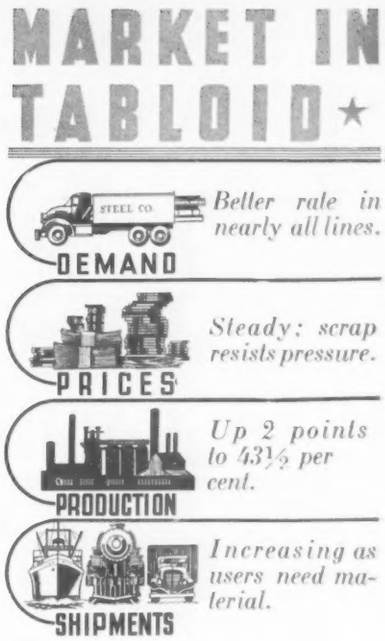
New Bearing Metal

■ A self-lubricating metal for bearing purposes, formed by combining in a solid body pure metallic lead and copper, has been developed by Woodworkers' Tool Works, 222 South Jefferson street, Chicago.

Known as Oman metal, this bearing material is actually a copper matte having its interstices filled with amorphous virgin lead. Lead therefore is available as a lubricant and the copper serves as a heat expellent and supporting medium. This metal is easily machined. No cutting lubricant need be used, as inherent lubricating characteristics of metal serve this purpose.

Definite Signs Point To Continued Revival

Heavy Needs Impend For Federal Work, Autos, Railroads



■ STEADILY increased buying of steel by miscellaneous consumers continues to push up the rate of production, as most orders specify immediate delivery.

This enlarged demand is contrary to usual seasonal trends and is developing without assistance from the automotive and railroad industries, usually strong supporters. Inasmuch as current buying has caused production to move well above 40 per cent of capacity steelmakers believe impending demand from automotive sources and continued expansion of construction activity will result in much higher operations during the fall.

Unusually rapid progress is being made in bringing PWA projects to the bidding stage, in order to hasten employment. This program involves a large aggregate tonnage of steel which is expected to be on mill books before cold weather. It seems inevitable that railroads, which have held buying to a minimum, will be forced into the market before the end of the year for steel to cover repair programs and perhaps for some additional rolling stock. Increased carloadings point to need for more cars than now are in good order, necessitating action to provide greater carrying capacity.

Only small preliminary tonnages have been placed by automotive builders but some partsmakers are building banks of parts in anticipation of heavy demands when 1939 model assembly gets under way.

Continuing its steady rise from the low point in June the national operating rate last week advanced 2 points to 43.5 per cent, the seventh consecutive increase from 24 per cent. Pittsburgh gained 3 points to 33 per cent, Chicago 1.5 points to 37.5, Youngstown 2 points to 43, Buffalo 2.5 points to 46.5, Detroit 8 points to 60. Wheeling was unchanged at 54 per cent, Eastern Pennsylvania at 30, Birmingham at 53, New England at 50 and Cincinnati at 65. St. Louis dropped 3 points to 33 and Cleveland 2 points to 41.

Tin plate buying is being held at a minimum pending announcement of prices for fourth quarter, expected within a short time. Vegetable packs this year are somewhat less than last because of considerable carryover.

Structural bookings are increasing, almost exclusively for public works, federal, state and municipal. The largest award last week was 4100 tons for four hangars at Ft. Lewis, Wash. Two hangars at Sand Point, Wash., were let, requiring 1670 tons. A bridge at New Orleans takes 1500 tons and another in Louisiana 2000 tons. Shops at the navy yard, Norfolk, Va., involve 1175 tons. Pending work is heavy and most projects are being pushed to obtain an early start on construction.

Prices are easier on steelmaking scrap in absence of tonnage buying though other grades are holding at previous levels. Small sales to steelmakers have been at slightly lower figures but supplies are not large and it is believed tonnage purchases would be at present or higher prices. There is considerable underlying strength and no recession from the present level is expected. Increasing production rates indicate considerable covering within a short time, with resultant strengthening of prices.

Automobile production eased as General Motors plants practically shut down for changeover. Total output was 18,700 units, compared with 23,940 the week before. General Motors dropped to 500 from 10,300; Chrysler stepped up to 1950, compared with 900; Ford produced 14,000, against 11,000 the preceding week; and the independents made 2250, compared with 1740.

Exports of steel and iron products in July totaled 137,276 gross tons, compared with 149,955 tons in June, exclusive of scrap. For seven months exports aggregate 1,254,642 tons, compared with 1,834,750 tons in the same period last year, also excluding scrap. Scrap exports in July were 126,423 tons, compared with 162,066 tons in June. For seven months scrap exports were 1,924,736 tons, compared with 2,597,403 tons in seven months of 1937. Imports in July were 14,728 tons, compared with 15,887 tons in June.

Adjustments in prices of steelmaking scrap in the East caused the composite for that material to decline 4 cents to $14.25. The iron and steel composite rose 1 cent to $36.50 and the finished steel composite remained steady at $57.20.

COMPOSITE MARKET AVERAGES

	Aug. 27	Aug. 20	Aug. 13	One Month Ago July, 1938	Three Months Ago May, 1938	One Year Ago Aug., 1937	Five Years Ago Aug., 1933
Iron and Steel	$36.50	$36.49	$36.51	$36.32	$38.50	$40.34	$29.92
Finished Steel	57.20	57.20	57.20	57.20	61.70	61.70	47.50
Steelworks Scrap..	14.25	14.29	14.58	13.06	11.47	20.41	11.57

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Aug. 27, 1938	July 1938	May 1938	Aug. 1937
Steel bars, Pittsburgh	2.25c	2.25c	2.45c	2.45c
Steel bars, Chicago	2.25	2.25	2.50	2.50
Steel bars, Philadelphia	2.57	2.57	2.77	2.76
Iron bars, Terre Haute, Ind.	2.15	2.15	2.35	2.35
Shapes, Pittsburgh	2.10	2.10	2.25	2.25
Shapes, Philadelphia	2.215	2.215	2.40	2.455
Shapes, Chicago	2.10	2.10	2.30	2.30
Plates, Pittsburgh	2.10	2.10	2.25	2.25
Plates, Philadelphia	2.15	2.295	2.41	2.435
Plates, Chicago	2.10	2.10	2.30	2.30
Sheets, hot rolled, Pittsburgh	2.15	2.15	2.40	2.40
Sheets, cold-rolled, Pittsburgh	3.20	3.20	3.45	3.55
Sheets, No. 24, galv., Pittsburgh	3.50	3.50	3.80	3.80
Sheets, hot rolled, Gary	2.15	2.15	2.50	2.50
Sheets, cold-rolled, Gary	3.20	3.20	3.55	3.65
Sheets, No. 24, galv., Gary	3.50	3.50	3.90	3.90
Bright bess., basic wire, Pitts.	2.60	2.60	2.90	2.90
Tin plate, per base box, Pitts.	$5.35	$5.35	$5.35	$5.35
Wire nails, Pittsburgh	2.45	2.45	2.75	2.75

Semifinished Material

Sheet bars, open-hearth, Youngs.	$34.00	$34.00	$37.00	$37.00
Sheet bars, open-hearth, Pitts.	34.00	34.00	37.00	37.00
Rerolling billets, Pittsburgh	34.00	34.00	37.00	37.00
Wire rods, No. 5 to 9/32-inch, Pitts.	43.00	43.00	47.00	47.00

Pig Iron

	Aug. 27, 1938	July 1938	May 1938	Aug. 1937
Bessemer, del. Pittsburgh	$21.34	$21.34	$25.34	$25.26
Basic, Valley	19.50	19.50	23.50	23.50
Basic, eastern, del. Philadelphia	21.34	21.34	25.34	25.26
No. 2 foundry, Pittsburgh	21.21	21.21	25.21	25.21
No. 2 foundry, Chicago	20.00	20.00	24.00	24.00
Southern No. 2, Birmingham	16.38	16.38	20.38	20.38
Southern No. 2, del. Cincinnati	19.89	19.89	23.89	23.69
No. 2X eastern, del. Philadelphia	22.215	22.215	26.215	26.135
Malleable Valley	20.00	20.00	24.00	24.00
Malleable, Chicago	20.00	20.00	24.00	24.00
Lake Sup., charcoal, del. Chicago	28.34	28.34	30.34	30.04
Gray forge, del. Pittsburgh	20.17	20.17	24.17	24.17
Ferromanganese, del. Pittsburgh	97.77	97.77	107.77	107.29

Scrap

Heavy melting steel, Pittsburgh	$15.25	$12.05	$11.55	$21.85
Heavy melt. steel, No. 2, E. Pa.	12.75	12.20	10.00	18.00
Heavy melting steel, Chicago	13.75	12.05	11.05	19.75
Rails for rolling, Chicago	17.75	17.05	14.85	21.75
Railroad steel specialties, Chicago	16.75	14.95	13.60	22.25

Coke

Connellsville, furnace, ovens	$3.75	$3.75	$4.25	$4.50
Connellsville, foundry, ovens	5.00	5.00	5.25	5.30
Chicago, by-product fdry., del.	10.50	10.80	11.00	11.00

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh, Gary	2.15c
Chicago, delivered	2.18c
Cleveland	2.15c
Detroit, del.	2.25c
Buffalo	2.15c
Sparrows Point, Md.	2.15c
New York, del.	2.39c
Philadelphia, del.	2.32c
Granite City, Ill.	2.25c
Middletown	2.15c
Youngstown	2.15c
Birmingham	2.15c
Pacific Coast points	2.65c

Cold Rolled

Pittsburgh, Gary	3.20c
Chicago, delivered	3.23c
Buffalo	3.20c
Cleveland	3.20c
Detroit, delivered	3.30c
Philadelphia, del.	3.52c
New York, del.	3.54c
Granite City, Ill.	3.30c
Middletown	3.20c
Youngstown	3.20c
Pacific Coast points	3.80c

Galvanized No. 24

Pittsburgh, Gary	3.50c
Chicago, delivered	3.53c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown	3.50c
Youngstown	3.50c
Pacific Coast points	4.00c

Tin Mill Black No. 29

Pittsburgh	3.15c
Gary	3.15c
Granite City, Ill.	3.25c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.95c
Pacific Coast	4.65c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.10c
New York, del.	2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, base	2.10c
Sparrows Point, base	2.10c
Claymont, Del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c
Pittsburgh	3.35c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast points	2.70c

Tin and Terne Plate

Tin plate, coke (base box) Pittsburgh, Gary	$5.35
Granite City	5.45
Mfg. terne plate, Pittsburgh, Gary	4.65c
Granite City	4.75c

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	2.25c
Chicago or Gary	2.25c
Duluth	2.35c
Birmingham	2.25c
Cleveland	2.25c
Buffalo	2.25c
Detroit, delivered	2.35c
Philadelphia, del.	2.57c
Boston, delivered	2.62c
New York, del.	2.59c
Gulf ports	2.60c
Pacific Coast points	2.85c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.10c
Chicago or Gary	2.10c
Detroit, delivered	2.20c
Cleveland	2.10c

Buffalo	2.10c
Birmingham	2.10c
Gulf ports	2.45c
Pacific coast points	2.70c

Iron

Terre Haute, Ind.	2.15c
Chicago	2.15c
Philadelphia	2.47c
Pittsburgh, refined	3.50-8.00c

Reinforcing

New billet, straight lengths, quoted by distributors

Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt.	2.05c
Detroit, delivered	2.15c
Gulf ports	2.40c
Pacific coast ports, f.o.b. car docks	2.50c
Philadelphia, del.	2.22c

Rail steel, straight lengths, quoted by distributors

Pittsburgh, Gary, Chicago, Buffalo, Cleveland, Birmingham	1.90c
Detroit, delivered	2.00c
Gulf ports	2.25c
Pacific Coast	2.35c

Wire Products

Pitts.-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads

Standard wire nails	$2.45
Cement coated nails	$2.45

(Per pound)

Polished staples	3.15c
Galv. fence staples	3.40c
Barbed wire, galv.	3.20c
Annealed fence wire	2.95c
Galv. fence wire	3.35c
Woven wire fencing (base C. L. column)	67.00
Single loop bale ties, (base C. L. column)	56.00

To Manufacturing Trade

Base, Pitts.-Cleve.-Chicago-Birmingham (except spring wire)	
Bright bess., basic wire	2.60c
Galvanized wire	2.65c
Spring wire	3.20c

Worcester, Mass., $2 higher on bright basic and spring wire.

Cut nails, C. L. Pitts. (10% disc. on all extras)	$3.60

Cold-Finished Bars

	Carbon	Alloy
Pittsburgh	2.70c	3.40c
Chicago	2.70c	3.40c
Gary, Ind.	2.70c	3.40c
Detroit	2.75c	*3.50c
Cleveland	2.70c	3.40c
Buffalo	2.70c	3.40c

*Delivered.

Alloy Bars (Hot)

(*Base, 3 to 25 tons*)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem 2.80c

Detroit, delivered 2.90c

Alloy	Diff.	Alloy	Diff.
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo. 0.55

4600 0.20 to 0.30 Mo. 1.50-2.00 Ni. 1.10

5100 0.80-1.10 Cr. 0.45

5100 Cr. spring flats 0.15

6100 bars 1.20

6100 spring flats 0.85

Cr. N., Van. 1.50

Carbon Van. 0.85

9200 spring flats 0.15

9200 spring rounds, squares 0.40

Electric furnace up 50 cents.

Piling

Pittsburgh	2.40c
Chicago, Buffalo	2.40c
Gulf ports	2.75c

Strip and Hoops

(Base, hot-rolled, 1 to 25 tons; cold-rolled, 3 to 25 tons)

Hot strip to 23⅛-in. Pittsburgh, Chicago, Gary, Cleveland Youngstown, Middletown Birmingham	2.15c
Detroit, del.	2.25c
Philadelphia, del.	2.47c
New York, del.	2.51c
Cooperage hoop, Pittsburgh, Chicago	2.25c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.95c
Chicago	3.05c
Detroit, del.	3.05c
Worcester, Mass.	3.15c

Carbon	Cleve. Pitts.
0.26—0.50	2.95c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass., $4 higher.

Commodity Cold-Rolled Strip	
Pitts.-Cleve.-Youngstown	3.10c
Detroit, del.	3.20c
Worcester, Mass.	3.50c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill	$42.50
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality	39.00
Angle bars, billet, mills	2.80c
Do., axle steel	2.35c
Spikes, R. R. base	3.15c
Track bolts, base	4.35c
Car axles forged, Pitts., Chgo., B'ham.	3.15c
Tie plates, base	$46.00

Base, light rails 25 to 60 lbs.; 20 lbs. up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine

½ x 6 and smaller	65-5-5 off
Do. larger, to 1-in.	60-10-5 off
Do. 1⅛ and larger	60-5-5 off
Tire bolts	50-5 off

Stove Bolts

In packages with nuts attached 70-5 off; in packages with nuts separate 70-10-5 off; in bulk 80-5 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	50-10-5-5 off
Elevator bolts	50-10-5-5 off

Plow Bolts

All sizes	65-5-5 off

Nuts

Semifinished hex.; ⅛-in. and smaller	60-10-5 off
Do., ⅜ to 1-inch	60-5-5 off
Do., over 1-inch	60-5 off

Hexagon Cap Screws

Milled	50-10-5 off
Upset, 1-in. smaller	67½-10 off

Square Head Set Screws

Upset, 1-in., smaller	75-10 off
Headless set screws	70-10 off

Rivets, Washers

Structural, Pittsburgh, Cleveland	3.40c
Structural, Chicago	3.40c
⅞-inch and smaller, Pitts., Chi., Cleve.	65-10 off
Wrought washers, Pitts., Chi., Phila. to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75 off	
Do., less carloads, 5 kegs or more, no discount on any extras	$3.90
Do., under 5 kegs no disc. on any extras	$4.05

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 2½ less. Wrought pipe, Pittsburgh.

Butt Weld

Steel

In.	Blk.	Galv.
⅛	63½	54
¼	66½	58
⅜—⅝	68½	60½

Iron

⅜	30	13
½—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel

2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
11 and 12	63½	54

Iron

2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

Steel

1 to 3, butt weld	67½
2, lap weld	60
2½ to 3, lap weld	63
3½ to 6, lap weld	65
7 and 8, lap weld	64
10-inch lap weld	63½
12-inch, lap weld	62½

Iron

	Blk.	Galv.
¾ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet, f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½" O. D.	13	$ 9.72	$23.71
1¾" O. D.	13	11.06	22.93
2" O. D.	13	12.38	19.35
2¼" O. D.	13	13.79	21.68
2¾" O. D.	12	15.16	.....
2½" O. D.	12	16.58	26.57
2¾" O. D.	12	17.54	29.00
3" O. D.	12	18.35	31.36
3½" O. D.	11	23.15	39.81
4" O. D.	10	28.66	49.90
5" O. D.	9	44.25	73.93
6" O. D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1" O. D.	13	$ 7.82	$ 9.01
1¼" O. D.	13	9.26	10.67
1½" O. D.	13	10.23	11.79
1¾" O. D.	13	11.64	13.42
2" O. D.	13	13.04	15.03
2¼" O. D.	13	14.54	16.76
2¼" O. D.	12	16.01	18.45
2½" O. D.	12	17.54	20.21
2¾" O. D.	12	18.59	21.42
3" O. D.	12	19.50	22.48
3½" O. D.	11	24.62	28.37
4" O. D.	10	30.54	35.20
4½" O. D.	10	37.35	43.04
5" O. D.	9	46.87	54.01
6" O. D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$42.00-43.00
4-in., Birmingham	45.00-46.00
4-in., Chicago	53.80-54.80
6-in. & over, Chicago	50.80-51.80
6-in. & over, east fdy.	46.00
Do., 4-in.	49.00

Class A Pipe $3 over Class B

Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Rerolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary, Cleve., Buffalo, Young., Birm., Sparrows Point	$34.00
Duluth (billets)	36.00
Detroit, delivered	36.00

Forging Quality Billets

6 x 6 to 9 x 9-in., base

Pitts., Chicago, Buffalo	40.00
Duluth	42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago	34.00
Detroit, delivered	36.00

Wire Rods

Pitts., Cleveland, Chicago, Birmingham No. 5 to ⅝-inch incl.	43.00
Do., over ⅝ to 41/64-in. incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.75
Connellsville, fdry.	4.75- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.50- 5.75
Wise county fur.	4.50- 4.75

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	9.75
Chicago, del.	10.50
Milwaukee, ovens	10.50
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.00
Indianapolis, del.	10.00
Cincinnati, del.	9.75
Cleveland, del.	10.30
Buffalo, del.	10.50
Detroit, del.	10.25
Philadelphia, del.	10.65

Coke By-Products

Spot, gal., freight allowed east of Omaha

Pure and 90% benzol	16.00c
Toluol, two degree	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
Do. (450 lbs.)	15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls. to jobbers	6.75c
Per ton, bulk, f.o.b. port	
Sulphate of ammonia	$26.75

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$21.00	$21.50	$20.50	$22.00
Birdsboro, Pa.	21.00	21.50	20.50	22.00
Birmingham, Ala.‡	16.38	.....	15.38	21.00
Buffalo	20.00	20.50	19.00	21.00
Chicago	20.00	20.00	19.50	20.50
Cleveland	20.00	20.00	19.50	20.50
Detroit	20.00	20.00	19.50	20.50
Duluth	20.50	20.50	.....	21.00
Erie, Pa.	20.00	20.50	19.50	21.00
Everett, Mass.	21.75	22.25	21.25	22.75
Granite City, Ill.	20.00	20.00	19.50	20.50
Hamilton, O.	20.00	20.00	19.50	.....
Neville Island, Pa.	20.00	20.00	19.50	20.50
Provo, Utah	18.00	.....	.....	.....
Sharpsville, Pa.	20.00	20.00	19.50	20.50
Sparrow's Point, Md.	21.00	.....	20.50	.....
Swedeland, Pa.	21.00	21.50	20.50	22.00
Toledo, O.	20.00	20.00	19.50	20.50
Youngstown, O.	20.00	20.00	19.50	20.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:				
Akron, O., from Cleveland	21.39	21.39	20.89	21.89
Baltimore from Birmingham	21.78	.....	20.66	.....
Boston from Birmingham	21.87	.....	.....	.....
Boston from Everett, Mass.	22.25	22.75	21.75	23.25
Boston from Buffalo	22.25	22.75	21.75	23.25
Brooklyn, N. Y., from Bethlehem	23.50	24.00	.....	.....
Canton, O., from Cleveland	21.39	21.39	20.89	21.89
Chicago from Birmingham	†20.22	.....	.....	.....
Cincinnati from Hamilton, O.	20.44	21.11	20.78	.....
Cincinnati from Birmingham	20.06	.....	19.06	.....
Cleveland from Birmingham	20.32	.....	19.82	.....
Mansfield, O., from Toledo, O.	21.94	21.94	21.44	21.44
Milwaukee from Chicago	21.10	21.10	20.60	21.10
Muskegon, Mich., from Chicago, Toledo or Detroit	23.19	23.19	22.69	23.69
Newark, N. J., from Birmingham	22.15	.....	.....	.....
Newark, N. J., from Bethlehem	22.53	23.03	.....	.....
Philadelphia from Birmingham	21.46	.....	20.96	.....
Philadelphia from Swedeland, Pa.	21.84	22.34	21.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	22.45	22.45	21.95	21.95
St. Louis, northern	21.55	20.55	20.05	.....
St. Louis from Birmingham	†20.12	.....	19.82	.....
St. Paul from Duluth	22.08	22.08	.....	22.58

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $25.50, Phil. base, standard and copper bearing, $26.63.

Gray Forge		Charcoal	
Valley furnace	$19.50	Lake Superior fur.	$25.00
Pitts. dist. fur.	19.50	do., del. Chicago	28.34
		Lyles, Tenn	23.50

Silvery†

Jackson county, O., base: 6-6.50 per cent $24.50; 6.51-7—$25.00; 7-7.50—$25.50; 7.51-8—$26.00; 8-8.50—$26.50; 8.51-9—$27.00; 9-9.50—$27.50; Buffalo $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	56.05
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickset magnesite grains, f.o.b. Chewelah, Wash., net ton, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$23.50-24.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail $20, barge	$22.00
No. 2 lump	22.00-23.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $92.50
Do., del. Pittsburgh 97.77

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 28.00
Do., New Orleans 28.00
Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., ton lot 80.50
Do., 75 per cent 126.00
Spot, $5 a ton higher.

Silicoman., 2½ carbon 97.75
2% carbon 102.75 1% 112.75
Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.60-1.65

Ferrovanadium, 35 to 40%, lb., cont. 2.79-2.80

Ferrophosphorus, per ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del. carlots 10.50c
Do., ton lots 11.25c
Do., less-ton lots 11.50c

67-72% carloads, 2% carbon, per lb. contained chrome 16.50c
Do., ton lots 17.25c
Do., less-ton lots 17.50c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40%, lb. con. ti., ton lots $1.23
Do, less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb. 1.35
Do, less-ton lots 1.40
Spot 5c higher

Ferrocolumbium, 50-55%, contract, lb. con. col., f.o.b. Niagara Falls $2.25
Do, less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50
Do, spot 145.00
Do, contract, ton lots 145.00
Do, spot, ton lots 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50
Do, spot 160.00
Do, contract, ton lots 160.00
Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c
Spot ¼c lb. higher

Chromium Briquets, contract carloads, freight allowed, lb. 7.25c
Do, spot carlots, bulk 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.05
Do, smaller lots 2.15

Vanadium Pentoxide, contract, lb. contained 1.10
Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c
Do, spot 85.00c
88% chrome, contract 79.00c
Do, spot 84.00c

Silicon Metal, 1% iron, contract, lb. 14.50c
Do, 2% 13.00c
Spot ¼c higher

Silicon Briquets, contract, carloads, freight allowed, ton $69.50
Carload, spot 74.50
Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, freight allowed lb. 4.75c
Ton lots 5.25c
Less-ton lots 5.50c
Spot ¼c higher

Zirconium Alloy, 12-15%, carloads, gross ton $97.50
Do, spot 102.50
34-40%, contract, carloads, lb., alloy 14.00c
Do, ton lots 15.00c
Do, less-ton lots 16.00c
Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa., 200-lb. kegs, lb. $2.60
Do, 100-200 lb. lots 2.75
Do, under 100-lb. lots 3.00

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Struc-tural Shapes	Floor Plates	Sheets Hot Rolled	Sheets Cold Rolled	Sheets Galv. No. 24
Boston	3.98	4.21	5.21	3.85	3.85	5.66	3.86	4.93	4.76
New York (Metropolitan)	3.94	4.11	4.11	3.76	3.75	5.56	3.73	4.90	4.40
Philadelphia	3.60	3.60	4.10	3.40	3.40	5.00	3.40	....	4.50
Baltimore	3.80	3.95	4.35	3.65	3.65	5.00	3.70	5.05	4.30
Norfolk, Va.	4.00	4.15	4.55	3.85	3.85	5.20	3.90	4.80	5.40
Buffalo	3.60	3.97	3.97	3.77	3.55	5.40	3.50	4.55	4.40
Pittsburgh	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.60	4.50
Cleveland	3.50	3.65	3.65	3.55	3.73	5.33	3.50	4.70	4.68
Detroit	3.68	3.83	3.83	3.75	3.80	5.42	3.58	4.65	4.74
Cincinnati	3.85	4.00	4.00	3.80	3.83	5.43	3.75	....	4.78
Chicago	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.45	4.50
Minneapolis	3.85	4.00	4.00	3.80	3.80	5.40	3.75	5.10	4.75
Milwaukee	3.73	3.88	3.88	3.68	3.68	5.28	3.63	4.58	4.63
St. Louis	3.87	4.02	4.02	3.82	3.82	5.42	3.77	4.72	4.77
Kansas City	4.15	4.40	4.40	4.10	4.10	5.70	4.10	....	4.75
Memphis	4.01	4.16	4.16	3.96	3.96	5.71	3.91	....	5.26
Chattanooga	3.90	4.05	4.05	3.85	3.85	5.80	3.80	....	4.40
Tulsa, Okla.	4.64	4.79	4.79	4.59	4.59	6.19	4.54	....	5.54
Birmingham, Ala.	3.50	3.65	3.65	3.45	3.45	5.83	3.40	....	4.75
New Orleans	4.10	4.65	4.65	4.00	4.00	5.95	4.25	....	5.15
Houston, Tex.	3.50	5.85	6.25	4.05	4.05	5.65	4.20	....	5.25
Seattle	4.30	4.50	5.85	4.05	4.15	5.90	4.20	....	5.50
Portland, Oreg.	4.30	4.70	6.10	4.15	4.15	5.90	4.30	6.50	5.25
Los Angeles	4.00	4.50	6.35	4.00	4.00	6.20	4.20	6.30	5.05
San Francisco	4.05	4.45	6.00	3.85	3.95	5.45	4.00	6.40	5.15

	Cold Rolled Strip	Cold Finished Bars	SAE Hot-rolled Bars (Unannealed) 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series	SAE Cold Drawn Bars 2300	SAE Cold Drawn Bars 3100
Boston	3.61	4.43	4.28	7.65	6.25	6.00	8.05	8.73	7.33
New York	3.66	4.39	4.14	7.50	6.10	5.85	....	8.69	7.29
Philadelphia	3.66	4.36	3.85	7.46	6.06	5.81	8.71	....	....
Baltimore	....	4.35	3.95	....	....	..	....	....	....
Norfolk, Va.	....	4.60	.	....	....	....	....	....	....
Buffalo	3.57	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Pittsburgh	3.35	3.95	3.80	7.35	5.95	5.70	7.75	8.35	6.95
Cleveland	3.35	4.05	3.70	7.45	6.05	6.05	7.85	8.25	6.85
Detroit	3.55	4.10	3.83	7.57	6.17	5.92	7.39	8.55	7.15
Cincinnati	3.60	4.30	3.90	7.59	6.19	5.94	8.99	8.60	7.20
Chicago	3.65	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Minneapolis	....	4.64	4.00	7.60	6.20	8.79	9.34	8.94	7.54
Milwaukee	....	4.18	3.93	7.48	6.08	5.83	7.88	8.48	7.08
St. Louis	3.76	4.32	4.07	7.62	6.22	5.97	8.02	8.62	7.22
Kansas City	4.46	4.85	....	....	....	....	....	....	....
Memphis	....	4.61	....	....	....	....	....	....	....
Chattanooga	....	4.90	....	....	....	....	....	....	....
Tulsa, Okla.	....	5.09	....	....	....	....	....	....	....
Birmingham, Ala.	....	4.73	....	....	....	....	....	....	....
New Orleans	5.00	5.10	....	....	....	....	....	....	....
Seattle	....	5.60	5.65	....	7.80	7.65	8.45	....	....
Portland, Oreg.	....	5.60	6.10	9.00	8.00	7.85	8.70	....	....
Los Angeles	4.45	6.60	4.65	9.40	8.55	8.40	9.05	10.40	9.55
San Francisco	*9.30	6.55	5.20	9.65	8.80	8.65	9.30	10.65	9.80

*Based on minimum quantity.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, August 25

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Continental Channel or North Sea ports, gross tons Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$26.84 5 10 0	$15.04	1 17 0
Basic bessemer	....	18.09	2 4 6
Hematite, Phos. .03-.05	31.72 6 10 0*	.....	.....
Billets	$38.43 7 17 6	$34.55	4 5 0
Wire rods, No. 5 gage	55.02 11 5 6	41.67	5 2 6
Standard rails	$49.41 10 2 6	$46.75	5 15 0
Merchant bars	2.40c 11 0 0	1.91c to 1.94c	5 2 6 to 5 5 0
Structural shapes	2.32c 10 12 6	1.79c	4 17 6
Plates, ¼ in. or 5 mm.	2.52c 11 11 3	2.07c to 2.25c	5 12 6 to 6 2 6
Sheets, black, 24 gage or 0.5 mm.	2.83c 13 0 0	2.67c	7 5 0°
Sheets, gal., 24 ga., corr.	3.65c 16 15 0	3.12c	8 10 0
Bands and strips	2.89c 13 5 0	2.02c	5 10 0
Plain wire, base	4.25c 19 10 0	2.25c to 2.67c	6 2 6 to 7 5 0
Galvanized wire, base	5.07c 23 5 0	2.89c to 2.99c	7 17 6 to 8 2 6
Wire nails, base	4.03c 18 10 0	2.57c to 2.79c	7 0 0 to 7 10 0
Tin plate, box 108 lbs.	$ 4.94 1 0 3	.....	.....

British ferromanganese $92.50 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d	French Francs		Belgian Francs		Reich Mark	
Fdy. pig iron, Si. 2.5	$26.60 5 9 0(a)	$16.33	598	$14.87	440	$25.26	63
Basic bess. pig iron	24.40 5 0 0(a)	.....	...	.....	...	27.87	(b)69.50
Furnace coke	6.71 1 7 6	5.60	205	7.27	215	7.62	19
Billets	38.43 7 17 6	22.93	840	29.07	860	38.70	96.50
Standard rails	2.21c 10 2 6	1.38c	1,150	2.06c	1,375	2.38c	132
Merchant bars	2.65c 12 4 0††	1.30c	1,080	1.65c	1,100	1.98c	110
Structural shapes	2.40c 11 0 6††	1.27c	1,055	1.65c	1,100	1.93c	107
Plates, ¼-in. or 5 mm.	2.55c 11 14 3††	1.62c	1,350	2.06c	1,375	2.29c	127
Sheets, black	3.43c 15 5 0§	1.92c	1,600‡	2.36c	1,575‡	2.59c	144†
Sheets, galv., corr., 24 ga. or 0.5 mm	4.03c 18 10 0	2.70c	2,250	4.13c	2,750	6.66c	370
Plain wire	4.25c 19 10 0	1.99c	1,660	2.48c	1,650	3.11c	173
Bands and strips	2.82c 12 19 0††	1.45c	1,210	1.95c	1,300	2.29c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open hearth steel. Continent usually for basic-bessemer steel (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 67 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1.	12.00
Bos. dock No. 1 exp.	11.50-12.50
New Eng. del. No. 1	13.00
Buffalo, No. 1	14.00-14.50
Buffalo, No. 2	12.00-12.50
Chicago, No. 1	13.50-14.00
Chicago, auto, no alloy	11.50-12.00
Chicago, No. 2 auto	10.50-11.00
Cincinnati, dealers	11.50-12.00
Cleveland, No. 1	13.50-14.00
Cleveland, No. 2	12.50-13.00
Detroit, No. 1	10.00-10.50
Eastern Pa., No. 1	14.00-14.50
Eastern Pa., No. 2	12.50-13.00
Federal, Ill.	12.00-12.50
Granite City, R. R.	12.50-13.00
Granite City, No. 2	11.50-12.00
Los Angeles, No. 1	11.50-12.00
Los Angeles, No. 2	10.00-10.50
N. Y. dock No. 1 exp.	†11.50
Pitts., No. 1 (R. R.)	16.00-16.50
Pittsburgh, No. 1	15.00-15.50
Pittsburgh, No. 2	14.00-14.50
St. Louis, R. R.	12.00-12.50
St. Louis, No. 2	11.50-12.00
San Francisco, No. 1	12.00
Seattle, No. 1	10.00-12.00
Toronto, dirs. No. 1	9.00- 9.50
Valleys, No. 1	14.00-14.50

COMPRESSED SHEETS

Buffalo	12.00-12.50
Chicago, factory	12.50-13.00
Chicago, dealer	11.50-12.00
Cincinnati, del.	10.50-11.00
Cleveland	13.00-13.50
Detroit	11.50-12.00
E. Pa., new mat.	14.00-14.50
E. Pa., old mat.	10.00-10.50
Los Angeles	12.50-13.00
Pittsburgh	15.00-15.50
St. Louis	10.00-10.50
Valleys	13.50-14.00

BUNDLED SHEETS

Buffalo, No. 1	12.00-12.50
Buffalo, No. 2	11.00-11.50
Cleveland	10.50-11.00
Los Angeles	11.00-11.50
Pittsburgh	14.00-14.50
St. Louis	7.50- 8.00
Toronto, dealers	4.00

SHEET CLIPPINGS, LOOSE

Chicago	9.00- 9.50
Cincinnati, dealers	6.50- 7.00
Detroit	8.50- 9.00
†Los Angeles	3.75- 4.00
St. Louis	7.00- 7.50

BUSHELING

Buffalo, No. 1	12.00-12.50
Chicago, No. 1	11.50-12.00
Cincin., No. 1, deal.	6.50- 7.00
Cincinnati, No. 2	2.75- 3.25
Cleveland, No. 2	7.50- 8.00
Detroit, No. 1, new	11.00-11.50
Valleys, new, No. 1	13.25-13.75
Toronto, dealers	4.00

MACHINE TURNINGS (Long)

Birmingham	6.00- 7.00
Buffalo	6.50- 7.00
Chicago	6.50- 7.00
Cincinnati, dealers	4.00- 4.50
Cleveland	7.00- 7.50
Detroit	6.50- 7.00
Eastern Pa.	7.50- 8.00
Los Angeles	4.00- 4.25
New York	†3.50- 4.00
Pittsburgh	9.00- 9.50
St. Louis	4.00- 4.50
Toronto, dealers	4.25- 4.75
Valleys	8.50- 9.00

SHOVELING TURNINGS

Buffalo	8.00- 8.50
Cleveland	7.50- 8.00
Chicago	7.00- 7.50
Detroit	7.50- 8.00
Pittsburgh	9.50-10.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	2.00
Buffalo	7.00- 7.50
Cincinnati, dealers	3.50- 4.00
Cleveland	7.50- 8.00
Eastern Pa.	6.00- 6.50
Detroit	6.75- 7.25
New York	†2.50- 3.00
Pittsburgh	7.50- 8.00
Toronto, dealers	3.50

AXLE TURNINGS

Boston district	†7.50
Buffalo	9.50-10.00
Chicago, elec. fur.	13.50-14.00
Eastern Pa.	10.50-11.00
St. Louis	9.00- 9.50
Toronto	5.00

CAST IRON BORINGS

Birmingham	6.00- 6.50
Boston dist. chem.	†6.00
Bos. dist. for mills	†6.00
Buffalo	7.00- 7.50
Chicago	6.00- 6.50
Cincinnati, dealers	3.50- 4.00
Cleveland	7.50- 8.00
Detroit	6.75- 7.25
E. Pa., chemical	10.00-11.00
New York	†3.50- 4.00
St. Louis	4.25-4.75
Toronto, dealers	3.50

RAILROAD SPECIALTIES

Chicago	16.50-17.00

ANGLE BARS—STEEL

Chicago	15.50-16.00
St. Louis	14.50-15.00

SPRINGS

Buffalo	16.00-16.50
Chicago, coil	16.50-17.00
Chicago, leaf	16.00-16.50
Eastern Pa.	16.50-17.00
Pittsburgh	17.00-17.50
St. Louis	15.00-15.50

STEEL RAILS, SHORT

Birmingham	14.00
Buffalo	17.00-17.50
Chicago (3 ft.)	16.00-16.50
Chicago (2 ft.)	16.50-17.00
Cincinnati, dealers	17.00-17.50
Detroit	16.50-17.00
Los Angeles	15.00-17.50
Pitts., 3 ft. and less	17.00-17.50
St. Louis, 2 ft. & less	14.50-15.00

STEEL RAILS, SCRAP

Boston district	†13.50-14.00
Buffalo	16.00-16.50
Chicago	14.00-14.50
Cleveland	17.00-17.50
Pittsburgh	16.00-16.50
St. Louis	13.75-14.25
Seattle	16.00

FROGS, SWITCHES

Chicago	13.50-14.00
St. Louis, cut	13.50-14.00

ARCH BARS, TRANSOMS

St. Louis	15.00-15.50

PIPE AND FLUES

Cincinnati, dealers	6.25- 6.75
Chicago, net	8.00- 8.50

RAILROAD GRATE BARS

Buffalo	10.00-10.50
Chicago, net	8.00- 8.50
Cincinnati, dealers	7.25- 7.75
Eastern Pa.	13.50
New York	†8.50- 9.00
St. Louis	8.50- 9.00

RAILROAD WROUGHT

Birmingham	11.00-11.50
Boston district	†9.50-10.00
Chicago, No. 1 net	9.50-10.00
Eastern Pa., No. 1	15.00-15.50
St. Louis, No. 1	10.50-11.00
St. Louis, No. 2	12.00-12.50
Toronto, No. 1 dlr.	10.00

FORGE FLASHINGS

Boston district	†6.75- 7.00
Buffalo	12.00-12.50
Cleveland	12.00-12.50
Detroit	9.00- 9.50
Los Angeles	9.00
Pittsburgh	13.00-13.50

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	16.50-17.00

LOW PHOSPHORUS

Buffalo, crops	16.50-17.00
Cleveland, crops	18.00-18.50
Eastern Pa., crops	16.50-17.00
Pittsburgh, crops	17.00-17.50

LOW PHOS. PUNCHINGS

Buffalo	15.50-16.00
Chicago	16.00-16.50
Eastern Pa.	17.00-17.50
Pitts. (light & hvy.)	14.50-15.00
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	16.00-17.00
Boston	15.50-15.75
Chicago	17.50-18.00
New York	†14.00-14.50
Eastern Pa.	17.00-17.50
St. Louis	16.50-17.00

STEEL CAR AXLES

Birmingham	16.00-17.00
Buffalo	16.50-17.00
Boston district	†16.00
Chicago, net	20.00-20.50
Eastern Pa.	21.50-22.50
St. Louis	18.50-19.00

LOCOMOTIVE TIRES

Chicago (cut)	15.50-16.00
St. Louis, No. 1	14.00-14.50

SHAFTING

Boston district	†14.25
New York	†15.00-15.50
Eastern Pa.	19.50-20.00
St. Louis, 1¼-3¾"	17.00-17.50

CAR WHEELS

Birmingham	14.00-15.00
Boston dist., iron	†11.00
Buffalo, steel	16.50-17.00
Chicago, iron	14.50-15.00
Chicago, rolled steel	15.50-16.00
Cincin., iron, deal.	13.75-14.25
Eastern Pa., iron	16.50-17.00
Eastern Pa., steel	16.50-17.00
Pittsburgh, iron	15.00-15.50
Pittsburgh, steel	16.00-16.50
St. Louis, iron	13.00-13.50
St. Louis, steel	15.00-15.50

NO. 1 CAST SCRAP

Birmingham	13.00-13.50
Boston, No. 1 mach.	†11.00-11.25
N. Eng. del. No. 2	11.00-11.50
N. Eng. del. textile	12.50-13.00
Buffalo, cupola	14.50-15.00
Buffalo, mach.	15.50-16.00
Chicago, agri. net	11.50-12.00
Chicago, auto net	13.00-13.50
Chicago, railr'd net	11.50-12.00
Chicago, mach. net	13.00-13.50
Cincin., mach. deal.	12.25-12.75
Cleveland, mach. net	16.00-16.50
Eastern Pa., cupola	16.50-17.00
E. Pa., mixed yard	13.50-14.00
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	15.00-15.50
San Francisco, del.	13.50-14.00
Seattle	10.00-12.00
St. Louis, cupola	11.75-12.25
St. L., No. 1, mach.	14.00-14.50
St. Louis, agr. mach.	12.50-13.00
Toronto, No. 1, mach., net	11.00-12.00

HEAVY CAST

Boston dist. break.	†10.75
New England, del.	†12.50-13.00
Buffalo, break.	11.00-11.50
Cleveland, break. net	13.00-13.50
Detroit, auto net	11.50-12.00
Detroit, break	9.50-10.00
Eastern Pa.	15.50-16.00
Los Ang., auto, net	13.00-13.50
New York, break.	†11.00-11.50
Pittsburgh, break	13.00-13.50

STOVE PLATE

Birmingham	8.00- 8.50
Boston district	†8.00- 8.25
Buffalo	12.00-12.50
Chicago, net	10.00-10.50
Cincinnati, dealers	7.25- 7.75
Detroit, net	8.50- 9.00
Eastern Pa.	13.00-13.50
New York, fdry.	†9.00-10.00
St. Louis	10.00-10.50
Toronto, dealers, net	7.50- 8.00

MALLEABLE

Birmingham, R. R.	12.50-13.50
New England, del.	14.50-15.00
Buffalo	13.50-14.00
Chicago, R. R.	15.50-16.00
Cincin., agri. deal.	11.75-12.25
Cleveland, rail	15.00-15.50
Eastern Pa., R. R.	15.50-16.00
Los Angeles	17.50-18.00
Pittsburgh, rail	14.50-15.00
St. Louis, R. R.	12.50-13.00

Iron Ore

Lake Superior Ore

Gross ton, 51½ % Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-10.00
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, c.i.f. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	13.00
Swedish low phos.	13.00
Spanish No. Africa basic, 50 to 60% nom.	12.00
Tungsten, sh. ton. unit, duty pd. nom.	$21.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$24.50-25.50
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52%	nom. 35.00
So. African,, 50-52%	nom. 35.00
Indian, 50-52%	Nominal

Sheets

Sheet Prices, Page 62

Pittsburgh — Sheet and strip production continues the slow upward trend. Galvanized sheets continue to lead with production estimated for last week at 56 per cent of capacity. Jobber buying is the largest factor in the current galvanized sheet market, with some stocking evidenced against possible heavy buying in the agricultural field this fall. Indications of this have already been seen in the South where the crop season is well advanced.

Common and full finished sheet production still lags, although slight gains have raised it above 40 per cent for the first time since mid-November. Leading sheet interests are confident the weeks immediately following Labor day will bring out automotive buying.

Cleveland — Requirements for hot and cold-rolled sheets have eased slightly within the last week, reflecting completion of initial purchases from automotive interests. Current needs represent miscellaneous requirements from a variety of smaller consumers. Prompt delivery is requested on almost all specifications, indicating that inventor ies have been generally liquidated. Despite the mild reaction in new business recently, August bookings should register an increase of approximately 20 per cent over July.

Chicago — Sheetmakers await automotive activity as the accelerating factor in demand, to add to the current slight increase in sales. Miscellaneous users are taking somewhat better tonnages but the improvement is moderate. Most producers believe no decided upturn may be expected until well into September when automotive buying may become sufficient to give a definite uplift.

Boston — Improvement in sheet buying is spotty. Shipments thus far this month are slightly ahead of last on some finishes, notably blue annealed, but there is little forward buying by the larger industrial consumers, although consumption has improved with some, including stove makers and producers of household goods. Small tank and container demand is well sustained, but not brisk. Releases by jobbers are more numerous, but small individually for fill-in needs.

New York — Sheet specifications are fairly steady, and while sellers look for little change over the remainder of this month, they generally are more optimistic concerning the fall. Automobile accessory manufacturers are expected to become more active and there should be an increase in releases from manufacturers of electrical household appliances, as they build up stocks for the holiday trade.

Moreover, public construction work, with its requirements of galvanized sheets, will likely be more active than expected early in the summer, as numerous PWA financed projects are scheduled for figuring over the next several weeks.

Philadelphia — Volume of sheet buying is expanding moderately, headed by further releases by a local auto body builder. Specifications by stovemakers show a noticeable improvement and one radio manufacturer in this district is increasing production.

Buffalo—Demand for sheets and strip is limited to small orders for immediate needs but aggregate tonnage shows steady improvement. Warehouse buying to replenish depleted stocks is a factor.

Cincinnati—Sheet rolling schedules have recently varied from 40 to 45 per cent of capacity and adapted closely to current demand. Buying of the last two weeks has failed to maintain former vigor. Miscellaneous business has been sustained in good tonnage, especially notable from consumers of galvanized and enameling sheets. There is no indication of efforts to build up consumer stocks. Prompt delivery is an almost universal requirement.

Birmingham, Ala. — Southern mills this week report roofing sheets in fair demand and somewhat behind manufacturers' sheets, which for several weeks have shown slow but consistent improvement. Jobbers, for the most part, are confining purchases to immediate needs.

Strip

Strip Prices, Page 63

Pittsburgh — Strip buying continues slow in both hot and cold-rolled with production about 30 per cent. Until automotive needs are covered this condition promises to continue, miscellaneous needs being insufficient to give a substantial rolling schedule.

Cleveland — Miscellaneous requirements for wide and narrow hot and cold-rolled strip continues to show the slight improvement noted early this month. The most marked increase has originated from stamping concerns serving the automotive industry. Sellers anticipate further gains during September. Current buying is for immediate delivery indicating that inventories have been substantially liquidated. Prices are steady.

Chicago — Principal support for the strip market is provided by miscellaneous buyers. Automotive requirements are relied on to give a decided increase in the next few weeks. Most buyers ask immediate shipment there is less tendency than a month ago to hold inventories at a minimum.

Boston — While narrow cold strip buying has slackened slightly, August shipments with some rerollers will be 15 to 20 per cent higher than the previous month. One mill reports August volume the best of the year. Current orders are made up mostly of numerous small lots for prompt shipment with indications that consumer inventories are low. This is also true of users of hot strip. Although few buyers expect price advances for fourth quarter some protective buying has been done. Releases to automotive parts makers have gradually mounted with further improvement expected next month.

New York — Low inventories of narrow cold strip held by consumers, with a slight, but general improvement in consumption, has resulted in an increase of small orders for prompt shipment. In addition to low inventories, users have also fairly well liquidated heavy banks of finished goods which retarded purchases until recently. Specifications are widely diversified throwing a heavy burden on mills to meet delivery on such varied business. Prices are steady. Slight gains also are noted in hot strip buying.

Philadelphia—Slight improvement of a diversified character is apparent in both hot and cold-rolled strip.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 63

Manufacturers of bolts and nuts look forward to much better demand for the fall months, although August is proving one of the leanest months this year, March being the only one with less business. Increased needs for new model automobiles promises one source of additional demand and activity in PWA financing of various construction jobs will bring heavier demand within a short time.

Producers have recently advanced prices on hexagon cap screws and square head set screws approximately 15 per cent to bring the general price level more in line with costs.

Railroads are not active but several repair programs are pending

and will require a fair tonnage of bolts and nuts. At the moment shipyard specifications are furnishing most business, principally against ship contracts placed some time ago and now entering the active stage. Some new shipbuilding work is coming out from time to time.

Plates

Plate Prices, Page 62

Pittsburgh — Announcement has been made that Central Barge Co., recently organized to establish a river transport service, has plans in the hands of engineers for two towboats and 40 steel barges, requiring about 12,000 tons of steel. This is the largest river project for some time and indicates belief shipment by water is likely to increase with return of better business conditions.

Cleveland — Demand for standard steel plates is limited to small miscellaneous needs. However, considerable tonnage is involved in work temporarily held up and the volume of new inquiries has shown a slight gain, indicating a more active fall. Outstanding recent railroad purchase involves 2000 tons for a car repair program for the Chesapeake & Ohio. The work will be done in its own yards at Russel, Ky. Prices are firm.

Chicago — Outlook for plate demand is bettered by inquiries for municipal tanks. Allocation of PWA funds and lettings for municipal work have stimulated tank work and projects under consideration for early award have doubled in the past month. Delays experienced in previous PWA programs are not being met and work is moving rapidly toward fabrication. Tankmakers are operating at 60 to 75 per cent of capacity and expected municipal work is relied on to sustain present levels or give an increase. Railroad shops are taking small tonnages of plates for repair work but no further car buying is in sight for early fall.

Boston — With specified projects requiring plates slightly more numerous, including tank and boiler work, releases to shipyards are steady. There has been a small gain in miscellaneous demand with more full car orders appearing. General Ship & Engine Works, East Boston, has been awarded the contract for a lighthouse tender of the Elm class, for Staten Island, N. Y., at $74,000. Other contracts for tenders for lighthouse service which closed Aug. 10 include one, Lilac class, to Pusey & Jones Co., Wilmington, Del., $378,000, and one, Jasmine type, to Dubuque Boat & Boiler Works, Dubuque, Iowa, $132,500.

New York — Plate sellers generally have discounted continued dullness and are looking hopefully for improvement after Labor Day. The railroad outlook is far from promising and oil companies have few important programs under active contemplation, so far as can be learned. Building activities are expanding contraseasonally and there is a steadily increasing flow of ship specifications, which should be augmented as the year continues. The trend in machinery and equipment building is moving slowly upward, but from a relatively low point, so that it may take some time before it is a factor of normal importance. Export buying is light.

Approximately 8000 tons of steel, mainly plates, will be placed shortly for 30 all-welded steel scows for the New York department of sanitation. While not all formal details are completed it is reliably understood the Brewer Drydock Co., Staten Island, will build ten and sublet ten to the local yards of Bethlehem Shipbuilding Corp. and ten to Dravo Contracting Co., Pittsburgh. Deliveries are to be completed by Jan. 1.

Philadelphia—Plate demand lags, with no important releases from any source. Boiler shop needs are light and, while some tonnage was placed by the Pennsylvania early in the month, railroad buying is at a standstill.

Birmingham, Ala. — Immediate movement of steel plates, together with prospects, is described by mill interests as exceptionally good. This is due to considerable expenditures on the part of the government.

Seattle—While no large tonnages are up for figures, shops report a fair run of small tank and boiler jobs and service station work. Improved demand is expected when PWA projects are definitely developed. Commercial Boiler Works, Seattle, will fabricate two 72-inch steel penstocks and trash racks for the Ruby dam, Seattle light department, involving 100 tons of plates and about 50 tons of shapes.

San Francisco—Southwest Welding & Mfg. Co., was awarded the fleet moorings, under specification 8805, for the naval base at San Diego, Calif., involving 500 tons in addition to 500 tons of chain and 350 tons of steel castings. Truscon Steel Co. secured 100 tons for liner plates for Los Angeles under specification 3797. Moore Drydock Co. is low bidder on a lighthouse tender for delivery in Oregon, calling for 825 tons. Awards totaled 600 tons, bringing the year's aggregate to 22,355 tons, compared with 31,406 tons for the same period last year.

Plate Contracts Placed

500 tons, fleet moorings, naval base, San Diego, Calif., specification 8805, to Southwest Welding & Mfg. Co., Alhambra, Calif.

430 tons, 25 steel pontoons, 47½ x 16 x 2.10 feet, delivered afloat, Paducah, Ky., to St. Louis Shipbuilding & Steel Co., St. Louis, bids Aug. 16 to U. S. engineer, Louisville, Ky.

150 tons, (including shapes for trash racks), penstocks for Seattle light department, to Commercial Boiler Works, Seattle.

120 tons, two 100,000-gallon elevated water tanks, Gilbertsville, Tennessee valley authority, Knoxville, Tenn., to Chicago Bridge & Iron Co., Chicago, $24,845, awarded Aug. 18, bids Aug. 4.

100 tons, liner plates, specification 3797, Los Angeles, to Truscon Steel Co., Youngstown, O.

Unstated tonnage, harbor cutters 74 and 75, U. S. coast guard, to Gulfport Boiler & Welding Works, Port Arthur, Tex., $280,000 each; bids July 22.

Unstated tonnage, forty outlet conduits for Grand Coulee dam, Washington, 102 inches in diameter, to Puget Sound Machinery Depot, Seattle, at $208,585.

Unstated tonnage, eight steel needle flats, United States engineering, Huntington, W. Va.; to Nashville Bridge Co., Nashville, Tenn.

Plate Contracts Pending

825 tons two lighthouse tenders, Oregon; Moore Drydock Co., Oakland, Calif., low.

Bars

Bar Prices, Page 62

Pittsburgh — Bar orders show some improvement although the increase in hot-rolled is small. Some automotive business has developed in small lots, not indicative of what may be expected later. Present rate of buying is believed to represent current consumption closely as surveys indicate practically no inventory in hands of consumers. Cold-finished bars show an increase, attributed to buying by automobile accessory manufacturers with advance orders for 1939 models. Automobile builders have not been in the market yet.

Cleveland—Sellers of commercial and alloy steel bars note continued improvement in specifications from auto partsmakers. While most of these are not building up a bank of parts comparable to last year, they are working ahead of current requirements in preparation for the 1939 model runs. Buying by farm and road equipment concerns is substantially unchanged. Prices are unchanged.

Chicago — Steel bar demand is fairly steady here but business is

restricted by light buying by farm equipment manufacturers and absence of automotive demand. It is expected that the middle or the latter part of September will see a substantial upturn in the movement of hot-rolled carbon and alloy and cold-finished bars to partsmakers and automotive plants. Miscellaneous users have been the principal support to market activity lately and this group of consumers is counted on to expand its requirements further during coming weeks.

Boston — Scattered gains in demand for bars, notably alloy and special stock, are maintained, being reflected in the number of small orders. Buying and inquiry by the arsenals at Springfield and Watertown, Mass., is substantially better, while miscellaneous volume with district distributors holds. Soft steel carbon bar buying continues light, but orders from forging shops appear on the uptrend gradually. Shipyard requirements are steady, but railroads are buying little.

New York — While little gain in business is expected meanwhile, bar sellers generally anticipate a rather appreciable gain in September. Their opinion on prospects for sharply increased automobile demand and look for better tonnage from machinery and equipment builders.

While the railroad outlook is not promising, a moderate increase is expected. The carriers have been buying sparingly for months, and stocks are low. With more active repair and maintenance programs planned for this fall, there should be a better volume of specifications.

Philadelphia—Buying of steel bars is irregular, with some improvement from machinery and equipment builders for cold-drawn and hot alloy bars. Railroad specifications are negligible.

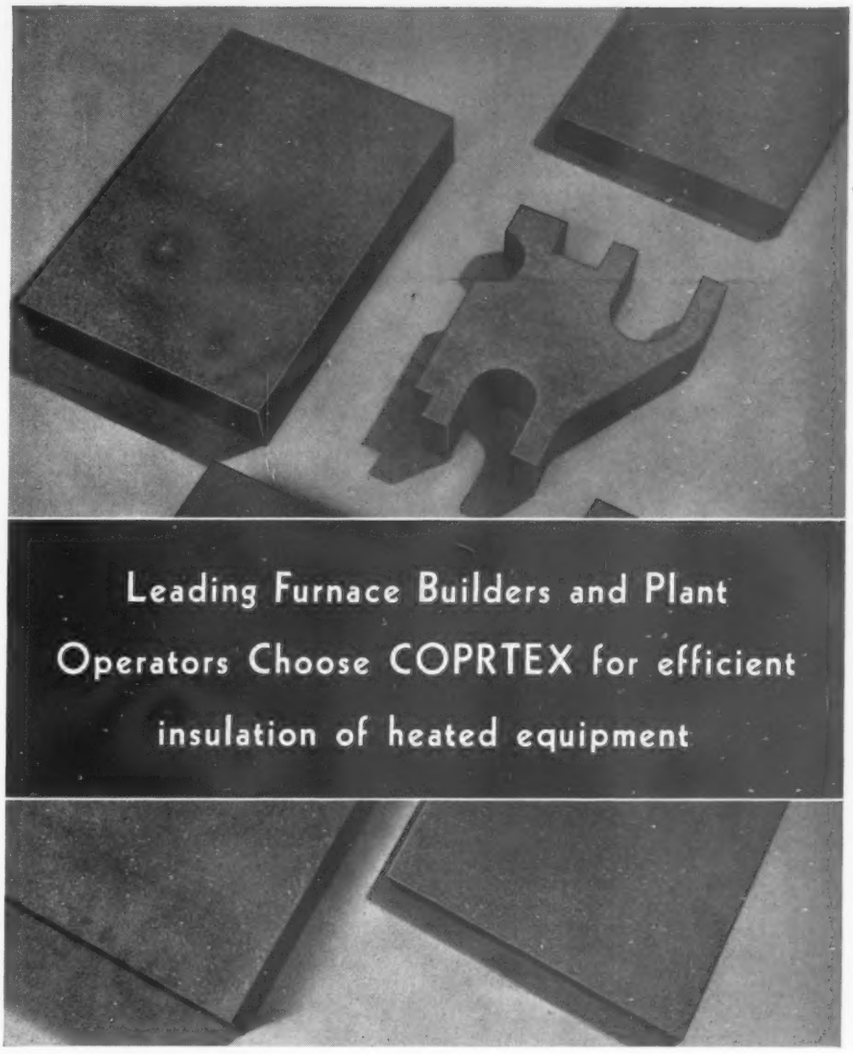
Buffalo—Even though automotive orders have not reached substantial proportions, demand for bars continues to show improvement.

Orders are highly diversified with the best inquiries coming from structural sources. Buying of general warehouse lines is also noticed as jobbers apparently are replenishing inventories. Heavy motor orders are expected after Labor day.

Metallurgical Coke

Coke Prices, Page 63

Pittsburgh—Movement of coke is increasing, demand for domestic grades coming out earlier than usual and ovens increasing their output to provide for expected heavy demand in a short time. Foundry grades are also in better demand, in keeping with increased melt.



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PLASTIC CEMENTS · DIATOMACEOUS EARTHS

Pipe

Pipe Prices, Page 63

Pittsburgh—Pipe markets are still showing the slow improvement characteristic of the field for the past several weeks. Improvement is small and is hardly noticeable in some divisions. There has been a slight bulge in orders for merchant pipe, the first in several months. This is in a large measure due to progress in construction jobs for the government in the East.

Cleveland — Cast iron pipe foundries continue to show mild improvement in operations, reflecting the steady increase in public work. J. B. Clow & Son Co., Cleveland, recently booked 280 tons for a water distribution project at North Canton, O.; through H. C. Miller, Canton, general contractor. Bids are in on 200 tons for a complete water plant at Mt. Pleasant, O. Gallagher & O'Hara, Youngstown, O., are reported low on the combined bid for a new water distribution system at Mentor, O. Most cast iron pipe foundries anticipate still further expansion of public work through the fall months. Prices are firm.

Chicago — Construction work involving cast iron pipe has increased greatly, following federal grants and loans for municipal water and sewage systems. Cast iron pipe buying the past 60 days has been the heaviest this year and engineers are busy with estimates on a flood of inquiries. Most of this work is for PWA, a leading exception being 4375 tons for the Chicago park district. City of Chicago has not awarded 3388 tons of 6, 8 and 12-inch pipe on which bids were taken several weeks ago. Expectation is that this will be placed with the low bidders, 1710 tons of 8-inch to United States Pipe & Foundry Co.; 1478 tons of 12-inch to Glamorgan Pipe & Foundry Co. and 200 tons of 6-inch to Alabama Foundry Co., Birmingham, Ala. Sept. 30 is the deadline for applications for PWA funds, which is expected to bring added tonnages within a short time. Second half cast pipe sales are expected to be greatly in excess of first half. Some sellers have booked more in the past 60 days than in the preceding six months.

Boston—Purchase of 2500 tons of cast pipe by a contractor for a water line, Osterville, Mass., is outstanding, the contract going to the Burlington, N. J., foundry. Small lot buying continues brisk with substantial inquiry looming. Portland, Me., and Greenfield, Mass., have projects on the boards taking several thousand tons of cast pipe. Wrought pipe demand is slightly improved with a fair tonnage up for piers and railing for a Kittery, Me., bridge. Merchant steel pipe sales through jobbers are slightly heavier.

New York—Steel pipe demand is expanding, with several large tonnages recently placed or pending. Two of the larger jobs are the heating and plumbing requirements of the housing developments of the Metropolitan Life Insurance Co., this city, with requirements for a similar project financed by PWA, known as the Red Hook housing project. Foundation work for the latter project was let recently and bids are about to be taken on the superstructure with the subletting of plumbing, heating and electrical work to follow.

Three inquiries taking approximately 2650 tons, cast pipe are up for estimates, including 1850 tons, Watervliet; 500 tons, Croton-on-Hudson and 300 tons, Cortland, N. Y. The first closes Sept. 7 and the last two Sept. 1. Current buying is mostly for miscellaneous fill-in needs, placed by contractors. The procurement division, treasury department is buying more cast pipe, but in small lots.

Birmingham, Ala. — Distinctly reassuring are prospects in cast iron pipe. Inquiry reveals more activity, not only on the part of the government's PWA and WPA but from utilities as well. Thus far there has been no particular production increase but the stage is being set for better schedules next month.

Seattle—Inquiry is more active as PWA projects come out for figures and considerable volume is anticipated during the last quarter.

Cast Pipe Placed

725 tons, water line, Richmond, Va., to Lynchburg Foundry Co., Lynchburg, Va.
377 tons, 2 to 16-inch, South Pasadena, Calif.; 312 tons to United States Pipe & Foundry Co., Burlington, N. J., and balance to American Cast Iron Pipe Co., Birmingham, Ala., and R. D. Wood & Co., Florence, N. J.
280 tons, water distribution system, North Canton, O., to J. B. Clow & Son Co., Cleveland.

Cast Pipe Pending

1850 tons, 24-inch, Watervliet, N. Y.; bids Sept. 7.
1660 tons, 4 to 20-inch, Tacoma, Wash.; United States Pipe & Foundry Co., Burlington, N. J., low.
938 tons, 16-inch, bay crossing line, eleventh naval district, specification 8953, San Diego ,Calif.; bids Aug. 30.
600 tons, 6 to 12-inch, Jacksonville, Ill.; Missouri Valley Engineering & Construction Co., St. Louis, general contractor.
500 tons, 4 to 10-inch, Brighton, Mich.
500 tons, 6 to 12-inch, Croton-on-Hudson, N. Y.; bids Sept. 1.
300 tons, up to 12-inch, Cortland, N. Y.; bids Sept. 1.
281 tons, 12-inch, Tacoma, Wash.; Payne & Galluchi, Seattle, low on general contract.
200 tons, complete water distribution system, Mt. Pleasant, O.; bids in.
141 tons, 3 to 6-inch, water district No. 54, Seattle; bids Sept. 1.
100 tons, 3 and 4-inch, for Billings, Mont.; bids in.

Wire

Wire Prices, Page 63

Pittsburgh — Seasonal factors have brought an increased demand for wire and its products and average production is estimated as 50 to 55 per cent of capacity. Most current buying is by jobbers, preparing stocks for fall buying. The upturn has been felt in manufacturers wire products and merchant wire.

Agricultural demand has started in the wake of crop maturity in the southwest but has not yet appeared from northern areas where crops are not yet harvested. This business covers merchant wire principally. Manufacturing wire is being stocked by jobbers in anticipation of increased fall business. Some automotive buying is being done by partsmakers.

Cleveland — New business in manufacturers' wire is fairly well maintained at the higher levels noted a few weeks ago. Mill operating schedules are holding steadily at the improved rate and further improvement is anticipated through September. Specifications for rods is particularly encouraging from automotive suppliers who are now building up banks of parts for 1939 models. Sellers expect total bookings during August to exceed July by a comfortable margin. Prices are firm.

Chicago—Gradual improvement is apparent in steel wire despite the fact the automotive industry has not started buying in quantity. When this comes the curve of improvement will be increased. Manufacturers' wire is most active, bedspring manufacturers being particularly active. Merchant wire sales to agricultural areas have been relatively heavy this year, though quiet during the harvesting season. Jobber stocks are relatively light as inventories have been held down and rush shipments to warehouses are being received.

Boston—Demand for wire specialties is holding at the recent improved rate, but with few additional gains. Orders are numerous, but widely diversified, small, and for prompt delivery. Finishing mills have stepped up operations slightly with indications that additional

points will be added early next month. Heavier and merchant wire goods lag behind a miscellaneous demand for manufacturers wire and specialties.

New York—Wire buying has generally been better than expected with most sellers. While there is no rush for large shipments of wire goods, a sustained increase in the number of orders covers a wide range of products with manufacturers wire and specialties to the industrial trade notably gaining. Spring wire to the furniture trade moves in better volume while there has been a moderate improvement in rope and electrical material.

Birmingham, Ala. — Wire products, while up some from the low of a few weeks ago, are in moderate demand. The upward trend of a few weeks ago has not been satisfactorily maintained and production is only fair.

Rails, Cars

Track Material Prices, Page 63

With practically no buying of freight cars this summer and prospects of better business during the fall, carloadings showing some expansion, an increase in inquiry for freight cars and locomotives seems likely for the closing months. Possibility of an increase in the price of steel for first quarter may also be a factor in bringing car buying. December usually is a fairly good month in this respect, although conditions at the end of 1937 caused an exception.

The Illinois Central is taking bids for parts for 1000 box cars and the New York Central is awaiting approval of its $5,000,000 loan to cover purchase of 28,600 tons of rails, a tonnage of accessories and repairs to 1000 freight cars, 300 passenger cars and 185 locomotives. Approval by the interstate commerce commission is regarded as certain. Chesapeake & Ohio has placed 2000 tons of steel, principally plates, for repair work, with several mills. The work will be done at its shops at Russell, Ky.

Locomotives Placed

Inland Steel Co., Chicago, one 45-ton diesel locomotive, to Plymouth Locomotive Works, Plymouth, O.

Locomotives Pending

Ferrocaril de Antioguia, Colombia, S. A. two 2-8-2 locomotives; bids asked.

Chrome Imports Lead

Philadelphia—Chrome ore arrivals featured imports here during the week ending Aug. 20, with 5000 tons coming from Sabang and 2504 tons from the Dutch East Indies.

Other arrivals included 41 tons of shapes from Belgium and two lots of steel tubing, 48 and 8 tons respectively, and 32 tons of forgings, all from Sweden.

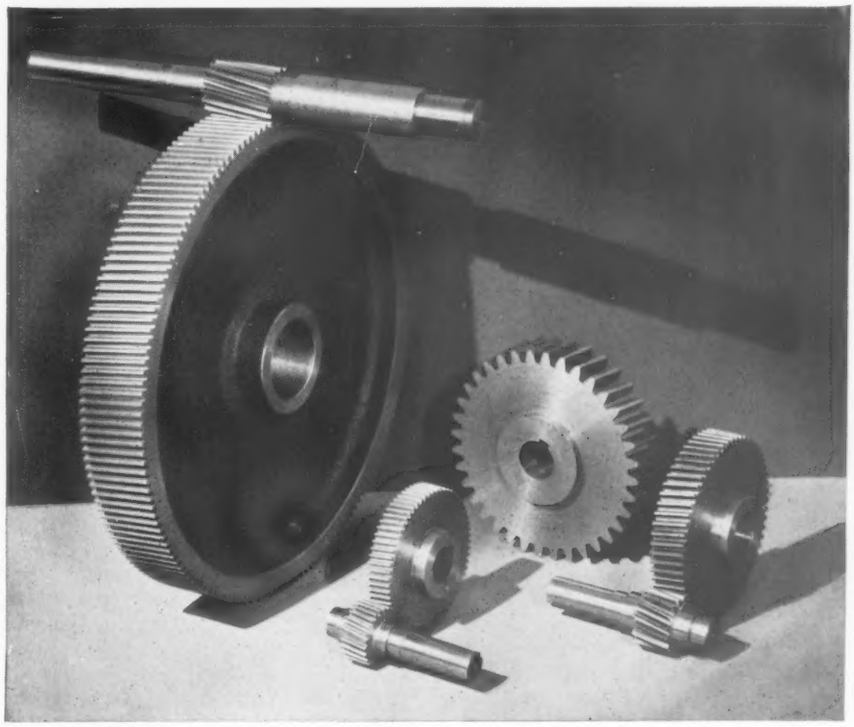
Semifinished

Semifinished Prices, Page 63

Pittsburgh — Semifinished orders have been in greater volume over the past few days, and the total on books is as large as at any time this year. Total tonnage rolled by integrated producers here for August will probably be the largest monthly total for the year to date.

There is no especially heavy demand, indicating that the smaller nonintegrated mills are still buying for immediate needs. The gratifying part of the picture is that the orders are becoming progressively larger, indicating a rise in demand for finished products.

Sheet bar orders have turned upward, however, which probably in-



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dicates some stocking going by smaller mills which anticipate automotive business. There has also been an increase in demand for merchant galvanized sheets which probably has been a factor in the sheet bar orders. Skelp is moving somewhat better as demand for merchant pipe moves up with the increasing construction program. The wire rod market has been more active since the fall upturn in wire orders started in about three weeks ago.

Shapes

Structural Shape Prices, Page 62

Pittsburgh—The shape market continues to hold its own in supplying a fair share of tonnage. For the first three weeks in August new projects total substantially more than the corresponding period last year, with slightly over 40,000 tons given out so far this year against a little over 30,000 tons last year. The awards are practically the same, about 27,000 tons being placed this year against slightly over 28,000 tons a year ago. An increasing number of private jobs are appearing.

Cleveland — Structural needs from private sources are restricted to small miscellaneous tonnages. However, fabricators note an increasing volume of prospective work which has not yet reached the bidding stage. The outstanding public project involves 1250 tons for the west approach to the Main street bridge, Cleveland, for which bids will be opened Sept. 20. Kilroy Structural Steel Co., Cleveland, recently booked 270 tons for a hospital addition, Lakewood, O. Fabricated prices remain unsteady.

Chicago—Activity in fabricated shapes is tending upward here. The improvement is small so far and results principally from pending and prospective work in building construction. Railroad demand for plates and shapes still is slow and the outlook for increased consumption in equipment building during the immediate future is none too favorable. Several fairly large structural jobs are in the offing. Included among such jobs are the downtown Chicago subway and the Missouri river bridge, Omaha, Nebr.

Boston—Including 1400 tons for the Ferry street bridge, New Haven, Conn., new structural contracts in New England approximate 2500 tons. Bidding the steel direct, the New Haven bridge contract will go to Harris Structural Steel Co. Inc., New York, at $279,437.70, bid Aug. 19. District fabricators have booked a number small projects aggregating several hundred tons. New inquiry is more active, including small bridges requiring little fabrication.

New York—Superstructure for Meeker avenue bridge, Newton creek, Brooklyn, expected out for estimates within the next two weeks is the largest new pending structural project. Bids are also in on a subway section, Brooklyn, and a viaduct, Hoboken, N. J., taking 7200 tons. Awards are down temporarily following recent heavy buying in this district, but new inquiry is gradually mounting.

Philadelphia—Public work dominates structural demand. While little business has recently been placed, fairly good aggregate tonnage is being figured. McCloskey & Co., Philadelphia, were the only bidders on state industrial school at White Hill, Pa., requiring 2000 tons of shapes and 1400 tons of bars.

Buffalo—Structural market has not changed much, with fabricators bullishly looking forward to an active fall period, supported chiefly by WPA projects. Hope is expressed that private industrial building now pending, will actually take form, once the federal spending program gets underway and stimulates general business.

Seattle—Bonneville administration has called bids at Portland Sept. 19 for 1353 galvanized steel towers involving in excess of 2000 tons. Quantities involved in the Narrows suspension bridge, near Tacoma, Wash., bids to Washington Toll Bridge authority, Olympia, Sept. 2, include 11,400 tons of shapes and 4197 tons of cables and castings.

San Francisco—Awards were the third largest for any week this year and aggregated 6921 tons, bringing the total to date to 91,373 tons compared with 119,280 tons in 1937. Bethlehem Steel Co. booked 4100 tons for fabrication at their Alameda, Calif., plant for four hangars for McCord field, Fort Lewis, Wash., and 1670 tons for two hangars at Sand Point, Wash., for fabrication at their Chicago plant.

Birmingham, Ala.—Next to plates, or probably on an equality with plates, is the demand for structural shapes, a considerable portion of which is going into government projects, notably bridges and highway crossings.

Unit Steel Bids to Maine State Highway Commission

Superstructure, Badger Island bridge, Kittery, Me.; bids Aug. 17

Material	Unit	A	B	C	D	Lowest total
Structural steel delivered	1,110,000 lbs.	$0.039	$0.0405	$0.045	$0.0429	$43,290.00
Structural steel erection..	1,101,500 lbs.	0.01	0.0115	0.0085	0.012	9,362.75

A—Harris Structural Steel Co. Inc., New York, low on contract at total of $54,305; B—Lackawanna Steel Construction Corp., Buffalo, second, $57,622.25; C—Bethlehem Steel Co., Bethlehem, Pa., third, $59,312.75, but low on erection, $9,362.75; D—American Bridge Co., Pittsburgh, fourth, $60.837; Phoenix Bridge Co., Phoenixville, Pa., fifth, $72,571.55; Pittsburgh-Des Moines Steel Co., Pittsburgh, sixth, $77,589.50.

Shape Awards Compared

	Tons
Week ended Aug. 27	**22,378**
Week ending Aug. 20	**36,348**
Week ended Aug. 13	**26,940**
This week, 1937	**25,878**
Weekly average, year, 1937	**23,251**
Weekly average, 1938	**17,362**
Weekly average, July	**13,886**
Total to date, 1937	**904,239**
Total to date, 1938	***607,487**

***Revised.**

Includes awards of 100 tons or more.

Shape Contracts Placed

4100 tons, four hangars, McCord field, Fort Lewis, Wash., to Bethlehem Steel Co., Alameda, Calif.

2000 tons, bridge, Atchafalaya river, Krotz Springs, La., to Mt. Vernon Bridge Co., Mt. Vernon, O., and Missouri Valley Bridge & Iron Co., Leavenworth, Kans.

1670 tons, two hangars, Sand Point, Wash., to Bethlehem Steel Co., Chicago.

1500 tons, state bridge, New Basin canal, New Orleans, La., to Jones & Laughlin Steel Corp., Pittsburgh.

1400 tons, Ferry street bridge, New Haven, Conn., to Harris Structural Steel Co. Inc., New York, $279,437.70, steel contract direct, bids Aug. 19. C. W. Blakeslee & Sons Inc., New Haven, low on general contract, $285,073.90.

1175 tons, addition, overhaul shop, navy yard, Norfolk, Va., to Lehigh Structural Steel Co., Allentown, Pa.

655 tons, bridge, Sequin, Tex., to Virginia Bridge Co., Roanoke, Va.

555 tons, Badger Island bridge, Kittery, Me., to Harris Structural Steel Co. Inc., New York.

500 tons, extension to building 100, naval supply depot, Norfolk, Va., to Belmont Iron Works, Eddystone, Pa.

500 tons, assembly shop, naval base, specification 8874, San Diego, Calif., to Bethlehem Steel Co., Los Angeles.

500 tons, bridge, Shepherd, Tex., to Bethlehem Steel Co., Bethlehem, Pa.

480 tons, addition, building 100, naval supply depot, Sewall's Point, W. Va., to Belmont Iron Works, Eddystone, Pa.

400 tons, bridge, Livingston, Tex., to Bethlehem Steel Co., Bethlehem, Pa.

390 tons, Crescent elementary school, Pittsburgh, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

325 tons, Firestone building, World's Fair, New York, to Belmont Iron Works, Philadelphia.

325 tons, state highway bridge FAGH-135-A, East Sioux Falls, S. Dak., to Bethlehem Steel Co., Bethlehem, Pa.

305 tons, bridge, Bell county, Texas, 195 tons to Mosher Steel Co., Dallas, Tex., and 110 tons, beam spans, to J. B. Beaird Corp., Shreveport, La.

302 tons, Washington state span, King county, to Bethlehem Steel Co., Seat-

tle; M. P. Butler, Seattle, general contractor.

275 tons, various bridges, Kansas and Missouri, for Missouri Pacific railroad, to Bethlehem Steel Corp., Bethlehem, Pa.

270 tons, addition to hospital, Lakewood, O., to Kilroy Structural Steel Co., Cleveland.

261 tons, Wolfe creek bridge, Plumas county, California, to Bethlehem Steel Co., Alameda, Calif.

250 tons, plant addition, E. I. Du Pont de Nemours & Co., Richmond, Va., to Bethlehem Steel Co., Bethlehem, Pa.

235 tons, stadium, Elmira, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

230 tons, steel skeleton airway towers, various locations, department of commerce, Washington, to Tulsa Boiler & Machinery Co., Tulsa, Okla., $24,435.04, bids July 25, previously reported as unstated tonnage.

225 tons, Washington school, Trenton, N. J., to Park Steel & Iron Co., Bradley Beach, N. J., $19,621, bids Aug. 11, board of education, Trenton.

225 tons, county bridge, Steuben county, Bath, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; John H. Bolton Co., Watkins Glen, N. Y., general contractor.

225 tons, bridge, Bowling Green, Ky., to Midland Structural Steel Co., Cicero, Ill.

210 tons, Nelson street bridge, Lexington, Va., to Virginia Bridge Co., Roanoke, Va.

204 tons, bridge, Adair, Okla., to Patterson Steel Co., Tulsa, Okla.

200 tons, bridge 5792, Eveleth, Minn., state of Minnesota and Duluth, Mesabi & Iron Range railroad, to Bethlehem Steel Co., Bethlehem, Pa.

180 tons, 11 beam spans, Ishpeming, Mich., treasury department, to Bethlehem Steel Co., Bethlehem, Pa.

175 tons, bebout units for dam 43, army engineers, Louisville, Ky., to American Car & Foundry Co., New York.

175 tons, bath house, Beaver park, Grand Island, N. Y., to Ernst Iron Works, Buffalo.

175 tons, building, St. Fidelis seminary, Herman, Pa., to Ingalls Iron Works, Birmingham.

175 tons, radial and skimmer gates, North Platte, Nebr., to Omaha Steel Works, Omaha.

150 tons, addition, Baker school, Brookline, Mass., shapes and bars to Groisser & Shlager Iron Works, Boston, and Concrete Steel Co., New York; Matthew Cummings Co., Boston, general contractor.

150 tons, six oil derricks for General Petroleum Corp. and Union Pacific R. R. Co., Long Beach, Calif., to unnamed interest.

150 tons, colliery, Glen Alden Coal Co., Maxwell, Pa., to Anthracite Bridge Co., Scranton, Pa.

150 tons, state highway bridge, Baxter, Pa., to Bethlehem Steel Corp., Bethlehem, Pa.

141 tons, building No. 91, navy yard, Bremerton, Wash., to Milwaukee Bridge Co., Milwaukee.

140 tons, army shops and buildings, Fort Lewis, Wash., to Pacific Car & Foundry Co., Seattle; Bailey Construction Co., Seattle, general contractor.

140 tons, Holy Rosary school, Jersey City, N. J., to Oltmer Iron Works, Jersey City, N. J.

135 tons, bridge, Woodstock, Vt., to American Bridge Co., Pittsburgh; Bristol Contracting Co. Inc., Bristol, N. H., general contractor, at $30,029.75, bids Aug. 17, Montpelier.

120 tons, bridge over Humboldt river, Salt Lake division, Southern Pacific Co., to Jones & Laughlin Steel Corp., Pittsburgh.

115 tons, residence, Alfred G. Vanderbilt, Glyndon, Md., to Dietrich Bros., Baltimore.

115 tons, residence, Richard K. Mellon, Ligonier, Pa., to Ingalls Iron Works, Birmingham, Ala.

100 tons, bridge, North canal, Lawrence, Mass., to Bethlehem Fabricators Inc., Bethlehem, Pa.

Shape Contracts Pending

16,000 tons, superstructure, Meeker avenue bridge, Newtown creek, Brooklyn; bids about mid-September.

10,528 tons, in addition to 3817 tons of wire cable, 200 tons of cast and forged steel and 8900 feet of H-columns, Narrows bridge, Tacoma, Wash.; bids Sept. 2.

6275 tons, subway, section 9, route 110, Brooklyn; George H. Flinn Corp., New York, low.

5487 tons, shapes and reinforcing bars, Prado dam, invitation 90, United States engineer office, Los Angeles; bids postponed from Sept. 15 to Sept. 19.

2000 tons or more, 1353 galvanized steel towers, Bonneville transmission line; bids to Bonneville administrator, Portland, Sept. 19.

2000 tons, state industrial school, White Hill, Pa.

1500 tons, army airplane hangar, Scott field, Belleville, Ill.; Bower Bros. Construction Co., Belleville, Ill., general contractor.

1250 tons, west approach to Main street bridge, Cleveland; bids Sept. 20; includes 1500 tons of bars.

1200 tons, hangar No. 1, Lowry field, Colorado, for U. S. government.

1000 tons, alterations, viaduct, Hoboken,

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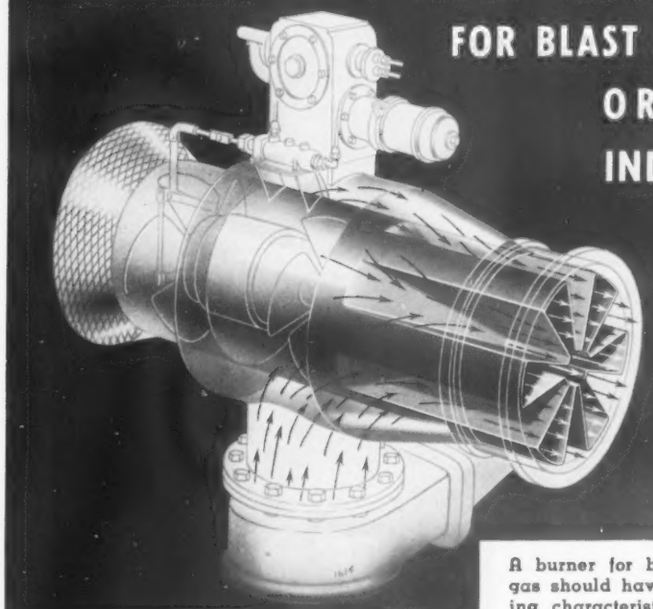

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N. J., George M. Brewster & Son, Bogota, N. J., low, bids Aug. 25.

750 tons, state bridge, Sixty-eighth street, Kenosha, Wis., for Chicago & North Western railway.

600 tons, bottling plant, Coca Cola Co., Baltimore.

500 tons, alterations to high school, Medford, Mass.

500 tons, school, Barker, N. Y.

400 tons, alterations to high school and stadium, Bradford, Pa.

395 tons, steel storage warehouse, navy yard, Bremerton, Wash.; Ingalls Iron Works, Birmingham, Ala., low.

375 tons, assembly building, Allis-Chalmers Mfg. Co., LaPorte, Ind.

372 tons, bridges, Illinois highway commission, Springfield; bids in.

365 tons, building, Firestone Tire & Rubber Co., World's fair, New York.

363 tons, extension to building 368, navy yard, Bremerton, Wash.; Ingalls Iron Works, Birmingham, Ala., low.

350 tons, Charleston navy yard, Belmont Iron Works, Philadelphia, low.

260 tons, addition, Hospital for Women of Maryland, Baltimore.

250 tons, factory building, Johnson Motor Co., Galesburg, Ill.

210 tons, eight powder magazines, United States army, Ogden, Utah.

210 tons, hospital building, Cambridge, Mass.

200 tons, warehouses, Chanute field, Rantoul, Ill.; bids Aug. 30.

200 tons, state bridge, Hulett, Wyo.

200 tons, addition to navy building, U. S. treasury department, Washington.

135 tons, Marble bridge, Woodstock, Vt.; Bristol Contracting Co. Inc., Bristol, N. H., low on general contract, $30,029.75, bids Aug. 17, Montpelier.

125 tons, warehouses, Scott field, Belleville, Ill.; bids Aug. 31.

115 tons, bridge 1595, over Pajarito creek, for Southern Pacific Co., Newkirk, Calif.

Unstated tonnage, three steel truss warehouses, McCord Field, Wash.; bids to constructing quartermaster, Fort Lewis.

Unstated tonnage, state bridge, 6-span, Meagher county, Montana; bids to highway department, Helena, Aug. 30.

Reinforcing

Reinforcing Bar Prices, Page 63

Pittsburgh—The reinforcing bar market is still weak in spots but there is a definite tendency toward a stronger market as the number of jobs and total tonnages increase. There are more jobs in the market now than for some time. Among the larger awards recently were 2200 tons of concrete bars for pier No. 5, Norfolk Navy Yard, Portsmouth, Va., to Bethlehem Steel Co., Bethlehem, Pa., through McLean Contracting Co., Baltimore, general contractor.

Cleveland — Reinforcing steel awards are mostly well under 50 tons. However, fabricators note a slight gain in the number of individual projects. Award of 550 tons involved in the Cloverleaf development near Brecksville, O., still pends. Largest project for which bids are now being asked is the west approach to the Main street bridge, Cleveland, involving approximately 1500 tons of bars. Prices generally are unstable.

Chicago—Pending and prospective business in reinforcing bars is heavier and although most activity is the result of public work, a favorable outlook is seen for several months. State and federal expenditures are commencing to be reflected more heavily in concrete bar inquiries and awards but the upturn in private work so far has been small. While occasional shading of reinforcing bar prices still is noted, the market is steadier than before the recent reduction in base quotations.

Boston—Inquiry is coming out in better volume and is ahead of current contracts. Small-lot buying is more active while developing public works enhance the outlook for both bars and mesh. Prices are easy.

New York—With the exception of 2000 tons let for a Brooklyn sewer, reinforcing steel buying is slower with several hundred tons of highway mesh placed for New York state work. More highway construction in New Jersey is going macadam at the expense of steel. For a bridge approach, Meeker avenue, Brooklyn, and another subway section 1200 tons have been bid. Prices continue weak.

Philadelphia—A few fair-sized jobs have been placed and pending inquiry includes 1400 tons for a state industrial school at White Hill, Pa., on which McCloskey & Co., Philadelphia, are low.

Seattle—Prospects are bright for an active fourth quarter with hundreds of projects for schools, road crossing and other public works approved by WPA in Washington, Oregon, Idaho and Montana.

San Francisco—A fair tonnage of reinforcing bars were placed and totaled 1585 tons. This brought the year's aggregate to 77,739 tons, compared with 66,619 tons a year ago. Judson Steel Corp. secured the largest lot, 483 tons for Mare Island, Calif.

Concrete Bars Compared

	Tons
Week ended Aug. 27	**8,331**
Week ending Aug. 20	**11,250**
Week ended Aug. 13	**10,569**
This week, 1937	**2,458**
Weekly average, year, 1937	**6,061**
Weekly average, 1938	**6,629**
Weekly average, July	**10,498**
Total to date, 1937	**218,351**
Total to date, 1938	**232,004**

Includes awards of 100 tons or more.

Reinforcing Steel Awards

2200 tons, pier, Norfolk navy yard, Portsmouth, Va., to Bethlehem Steel Co., Bethlehem, Pa.; McLean Contracting Co., Baltimore, general contractor at $1,427,000, bids Aug. 10, bureau of yards and docks, Washington.

600 tons, apartment houses, naval academy, Annapolis, Md., to Jones & Laughlin Steel Corp., Pittsburgh; Consolidated Engineering Corp., Baltimore, contractor at $1,100,825, bids Aug. 10, bureau of yards and docks, Washington.

600 tons, foundations, Queensbridge housing project, New York, to Fireproof Products Co., New York; through Corbetta Construction Co., New York, general contractor.

500 tons, apartment houses and storeroom, marine base, Quantico, Va., to Rosslyn Steel & Cement Co., Rosslyn, Va.; Doyle & Russell, Richmond, Va., general contractor.

438 tons, Mare Island, Calif., to Judson Steel Corp., San Francisco.

400 tons, veterans' administration building, Dayton, O., to West Virginia Rail Co., Huntington, W. Va.; through N. P. Severin Co., Chicago.

400 tons, jail and police station, San Diego, Calif., to unnamed interest.

300 tons, veterans' hospital, North Chicago, Ill., to Calumet Steel Co., Chicago; W. E. O'Neil Construction Co., Chicago, general contractor.

275 tons, Norfolk navy yard, to Taylor-Davis Inc., Philadelphia.

250 tons, paper machine building 15 and extension to finishing building, Scott Paper Co., Chester, Pa., to Bethlehem Steel Co., Bethlehem, Pa.; through Wark & Co., Philadelphia.

250 tons, buildings, veterans' hospital, Lyons, N. J., to Ceco Steel Products Co., New York; Andrew Christensen, Elizabeth, N. J., general contractor.

250 tons, nursery ward, Pacific Colony, Spadra, Calif., to unnamed interest.

225 tons, north approach, Highland park bridge, Aspinwall, Pittsburgh, to Jones & Laughlin Steel Corp., Pittsburgh; through John F. Casey Co., Pittsburgh.

210 tons, bridge, Eufaula, McIntosh county, Oklahoma, to Capitol Iron & Steel Co., Oklahoma City, Okla.; Moran & Buckner, Muskogee, Okla., general contractors.

200 tons, grade crossing, Borden avenue, Queens, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; through John Meehan & Son, New York.

200 tons, overpass, S. A. L. tracks, Portsmouth, Va., to Virginia Steel Co.; through McDowell & Wood and M. S. Hudgins, Roanoke, Va.

160 tons, powder magazines, Savanna, Ill., to Inland Steel Co., Chicago; Permanent Construction Co., Chicago, general contractor.

150 tons, bars and shapes, medical building No. 2, veterans' hospital, Huntington, W. Va., to West Virginia Rail Co., Huntington, and Roanoke Iron Works, Roanoke, Va.; Algernon Blair, Montgomery, Ala., general contractor.

150 tons, municipal sewer development, Philadelphia, to Taylor-Davis Inc Philadelphia.

140 tons, East side drive, New York, to Ceco Steel Products Co., New York; through Merritt-Chapman & Scott, New York, general contractors.

133 tons, mesh, highway project RC-3972, Delaware county, New York, to Bethlehem Steel Co., Bethlehem, Pa.; Connell & Laub, Apalachin, N. Y., general contractor.

100 tons, office building, United Illuminating Co., New Haven, Conn., to Bethlehem Steel Co., Bethlehem, Pa.; through Topper & Griggs Co., New Haven, Conn.

100 tons, bridge and approaches, Kan-

kakee river, Kankakee county, Illinois, to Calumet Steel Co., Chicago; L. V. Stranberg & Son Co., Chicago, general contractor.

100 tons, assembly building, specification 8874, naval base, San Diego, Calif., to unnamed interest.

Reinforcing Steel Pending

3750 tons, Hansen dam, United States engineer office, Los Angeles; general contract to Guy F. Atkinson Co., San Francisco at $5,688,419.

2000 tons, foundations for Bonneville dam transmission lines; bids to Bonneville Administrator, Portland, Oreg., Sept. 19.

1618 tons, Narrows bridge, near Tacoma, Wash.; bids to Washington Toll Bridge authority, Olympia, Sept. 2.

1400 tons, state industrial high school White Hill, Pa.; McCloskey & Co., Philadelphia, low.

1300 tons, Puget Sound Navy yard graving dock; bids at Washington, D. C., Sept. 14.

852 tons, approach, Meeker avenue bridge, Newtown creek, Brooklyn; Elmhurst Contracting Co., New York, low; bids Aug. 23.

700 tons, ordnance depot, Ogden, Utah.

615 tons, bridge, Clinton county, Lock Haven, Pa.

500 tons, hospital, Newton, Conn.

460 tons, public school No. 64, Ozone Park, Queens, N. Y., to Lehigh Structural Steel Co., Allentown, Pa.; through procurement division.

412 tons, United States engineer office, San Francisco; Soule Steel Co., San Francisco, low.

400 tons, subway, section 9, route 110, Brooklyn; George H. Flinn Corp., New York, low; bids Aug. 23.

400 tons, hospital, Wahjamega, Mich.

350 tons, hospital, for defectives, Springfield, Mo., Henke Construction Co., Chicago low on general contract.

315 tons, naval supply depot, specification 9606, Norfolk, Va., Taylor-Davis Inc., Philadelphia, low bidder.

225 tons, Masonic temple, Marquette, Mich.

150 tons, Central Nebraska Public Power & Irrigation group 22 E, Hastings, Nebr.

150 tons, sewage plant, Wausau, Wis.

140 tons, hospital, Coldwater, Mich.

130 tons, Washington state highway projects; bids at Olympia, Sept. 7.

106 tons, concrete portion, Badger Island bridge, Kittery, Me.; Ellis C. Snodgrass, Portland, Me., general contractor, bids Aug. 17; also includes 1400 linear feet, steel H-beam piles.

100 tons, Case School of Applied Science, Cleveland.

100 tons, grade separation, Lantz & G. T. railroad, Detroit.

100 tons, post office, Richmond, Calif.; general contract to James I. Barnes, Santa Monica, Calif.

Tin Plate

Tin Plate Prices, Page 62

New York — The tendency to go slowly in the canning of food crops because of the rather substantial carry-over from last season has been modified somewhat over recent weeks by the threat of more widespread hostilities abroad.

However, this has been regarded more as a possibility than a probability for this year, at least, and the original policy has not been revised severely. Packing of crops this year, notwithstanding bumper crops in some sections, will not be as heavy as a year ago, from present indications.

Had it not been for the handicap of early cold weather, tin plate sellers believe consumption of tin plate for beer containers would have increased this year.

General line cans are moving only moderately; and as for new orders for tin plate as a whole, only barest needs are being covered. This is true particularly because of the probability of a reduction in tin plate prices for the last quarter. Precisely what action will be taken will probably be revealed around the middle of next month.

Pittsburgh — There has been a slight increase in tin plate production but in the main the situation is unchanged. Demand for tin products has increased, forcing buyers to increase the size of their orders. It is this action which has caused the increase in production, which was small. The rate is estimated to be about 40 per cent, far below the levels of March and April when the current decline started.

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Pig Iron

Pig Iron Prices, Page 64

Pittsburgh—With pig iron demand showing little change from the quiet condition of the past few weeks several factors point to a more active situation in the fall. Foundry activity is showing slight improvement and releases have been given by several melters who have been out of the market for some time. Stocks in the hands of melters are light and all present shipments are going directly into production. As a result pig iron producers have accumulated sufficient reserve to care for heavier orders they feel sure will follow the present lull. Production in August is believed to be close to that of July.

Cleveland — Foundry coke shipments are up about 10 per cent this month, indicating a corresponding improvement in foundry melt. The increase has not been limited to any one industry. The most marked gains have been registered from automotive and miscellaneous jobbing foundries. Possibility of a price increase in the near future is thought unlikely by some sellers.

Boston — Pig iron demand continues to drag, buying being confined to scattered car lot and truck shipments. Little volume is coming from the larger consumers who still draw on stocks to meet current light foundry consumption. Foundry melt has made no additional gains. Some export business is available, but at prices too low to attract interest of sellers in this district.

New York — Pig iron shipments are good so far this month, although orders have not been up to the rate in July, when there was a certain amount of quarterly contracting. Specifications from soil pipe and heater equipment foundries are still outstanding, although a slight improvement has been noted recently from machinery builders, with a further gain from this source expected. Export buying is quiet.

Philadelphia—Movement of pig iron in August will exceed that of July, in the experience of most sellers. Soil pipe makers are among the more active consumers. General volume is still light with producers expecting a more substantial increase in September.

Buffalo—A slight increase in shipments has tended to encourage producers, who had become depressed by the recent failure of iron movement to keep pace with ingot production.

More releases against orders were reported this week, and indications are that August may equal the improved volume registered in July, despite a falling off in sales during the first two weeks.

Cincinnati—The movement of pig iron in August has been moderately heavier than last month. This is based on a slight improvement in the foundry melt and in desire of some consumers to build inventory. Betterment in the melt is irregular, with renewed activity on automobile parts. Demand for machine tool castings continues to maintain foundries on this class of work at the best levels in the district.

St. Louis — Buying of pig iron has receded to small proportions and aside from small amounts for prompt shipment not much business is expected prior to opening of books next month for fourth quarter. Shipments are holding at the active rate noted earlier in the month and indications point to a total for August about 50 per cent above July and comparing favorably with a year ago.

There has been little discussion or comment on price for fourth quarter. In certain quarters it is believed the current quotation will prevail through the balance of the year.

Considerable iron is owed on contracts, despite the heavy movement of recent weeks, and a number of important melters are well stocked. Barring a marked upward swing in business, they will be able to carry on well into the winter with what they have.

Birmingham, Ala. — Optimism continues to be manifested by pig iron melters of this district with the market currently described as firm. Shipping instructions, however, are not accompanying much of the business being booked in the district now. Twelve furnaces are in blast with Sloss Sheffield Steel & Iron Co. scheduling another stack to be blown in Thursday.

Toronto, Ont.—Demand for pig iron continues slow with sales running under 1500 tons weekly while shipments against contract bring deliveries to around 2700 tons per week. Melters are interested in iron for spot needs only and no forward delivery contracts are reported nor are melters taking in iron for stock. The daily melt is down to about 50 per cent, with indications of a higher ratio towards the latter part of next month. Current demand is chiefly for foundry iron which totals approximately 800 tons per week with the balance malleable iron. With four furnaces blowing pig iron production in July dropped to 51,238 long tons the lowest monthly rate for the year and compares with 64,376 tons in June. Prices are firm and unchanged.

Scrap

Scrap Prices, Page 66

Pittsburgh—Although surface appearances would indicate weakness in No. 1 heavy melting steel the underlying tone is firm. This is shown by inability to buy tonnages at lower than the current quotations. Some small tonnages have been covered slightly under prevailing levels as dealers have disposed of material to realize cash. For most part holders are refusing to dispose of yard material at concessions. Grades other than steelmaking are firm. Some cast scrap has been moving at the established levels.

Cleveland — Despite light buying of scrap some business is being done in specialties for shipment to outside points. Dealers here are more cheerful over the outlook and are indisposed to make long commitments at present prices. Quotations are about $1 higher on various steelmaking grades. Indications are that some buying may be done soon in the Youngstown district.

Chicago—Despite continued inactivity in the iron and steel scrap market, a fairly strong undertone prevails and prices are firm at recent levels. The trade is inclined to look for better activity during the next 60 days, counting on an expansion in operations of steelworks and foundries to bolster scrap demand. It is felt likely that the price trend during the balance of the year is more likely to be upward than to follow the recent downward trend.

Heavy melting steel nominally continues $13.50 to $14, with brokers generally paying $13.50 and finding sufficient material available to cover existing contracts. Shipments to one mill are restricted, due to an excess movement a short time ago.

Boston—Scattered reaction downward in iron and steel scrap prices has developed on some grades, but on the whole the market has held remarkably well against declines at several eastern consuming points. The upward movement has definitely halted for the time being with brokers lowering bids on several grades for domestic shipment, notably breakable cast, with some easiness in stove plate. Bids of $13 for tonnage, No. 1 heavy melting steel for dock delivery, export, with $12 offered for No. 2 has sustained heavy melting scrap prices, although some dealers still refuse to meet these quotations and are getting tonnage at a lower figure.

One dealer is offering $11.50 for No. 1 heavy melting steel for export against a $13 high quoted by another broker. Approximately 6000 tons of heavy melting steel was purchased

in this area by an exporter in the New York district at about $12, dock.

New York—With domestic buying and shipments light, iron and steel scrap prices are holding well, with a few scattered mark-downs of 50 cents a ton. Heavy breakable cast on cars, stove plate and No. 1 machinery cast for delivery to district foundries are off, but other grades are steady with export prices unchanged. Some heavy breakable cast shipments are held up by an eastern Pennsylvania consumer. While no new export business has been done with the European cartel, a considerable tonnage remains to be shipped against the last sale. Not until under Labor day is the domestic situation expected to show much change.

Philadelphia—Heavy melting steel is off an average of 25 cents per ton with No. 1 at $14 to $14.50, consuming point, and No. 2 at $12.50 to $13, with some buying at $12.50. Lower prices for prime material are due to lower offerings by sellers than to actual sales. The situation is in a deadlock with sellers not willing to make substantial concessions and consumers slow to place tonnages at present levels. Several other grades have been reduced, including heavy breakable cast, compressed sheets, stove plate and machine turnings.

Buffalo—An easier undertone prevails as the iron and steel scrap market, as far as sales are concerned, continues to mark time. While the market appears deadlocked there are still plenty of inquiries. But consumers are refusing to pay dealers' offering prices. The range on No. 1 heavy melting steel is maintained at $14 to $14.50 a ton, with customary differentials on other grades.

Detroit — With the local steelmaker taking small tonnages of busheling and bundles, the market is sentimentally stronger, in spite of easiness in other districts.

Scrap prices here are now being quoted on the basis of dealers' buying prices, in view of the lack of diversity of buying here. This area primarily is a scrap production center, and although about 75 per cent of the scrap produced in Detroit is consumed locally when steelmaking is at capacity, large tonnages are shipped out to other districts for melting, and Detroit cannot be considered a consuming center comparable to Pittsburgh or Youngstown.

Cincinnati—Softness in prices of iron and steel scrap, noticed two weeks ago, has resulted in lowering quotations by 25 cents. This is directly attributed to withdrawal of mills from a buying position after buying earlier in the month for near requirements. Covering on these contracts is being done deliberately with available material adequate.

St. Louis — The market for iron and steel scrap shows no signs of weakening. On the contrary, some grades have been advanced and are firm at the higher levels. An east side mill purchased 7500 to 8000 tons of No. 2 heavy melting steel at $13, which is as high as this material has sold on the present upward movement. The order specifies delivery over 60 days, and was distributed among four local dealers. Cast scrap is in demand and scarce. Prices for the several grades were marked up 75 cents per ton, No. 1 machinery cast being quoted at $14 to $14.50.

Birmingham, Ala. — A noticeable easing in movement of scrap is evident, with the largest consumer out of the market. Prices are nominal.

Toronto, Ont. — Trading in iron and steel scrap has fallen off with demand confined to a few special grades and shipments mostly going forward in small tonnage lots. Mills

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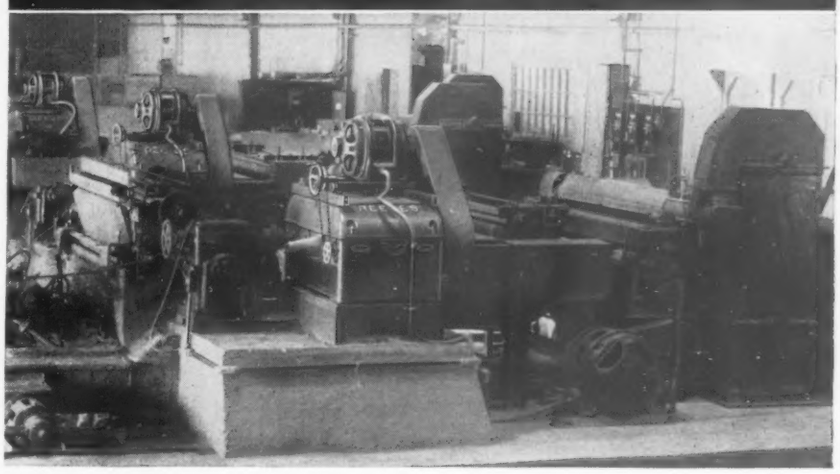

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Behind the Scenes with STEEL

Shades of Mr. Scott

■ Things are really working themselves up to a fever pitch in the Helpful Literature division of the Readers' Service department. The source of all the trouble is a black sheep copy of STEEL that finally comes to rest out in California somewhere. For weeks on end the postage-paid card from the Helpful Lit. page has been returned with the same piece of dynamite pasted on the back. It is a call to arms from our old friend Technocracy. A challenge to the Employer and to the Employe. *How much longer will your present job last,* it shouts. *What are you going to do about it?* We figured it was quite a joke until we walked into the Helpful Lit. office and almost had our eye put out with a sharp Fascist salute. The insidious propaganda must have struck home, and we are now keeping clear of those guys lest we find ourselves telling the boss that a two hour day is the answer to all our troubles. He would probably say we could start to work at 11, take an hour for lunch, and quit at 12, without pay.

Signs of the Times

■ It didn't take long last week to get the answer on something that can be used to counteract stink bombs. A phone call greeted us the first thing Monday morning. The gentleman said he didn't want to be quoted (and he has good reason) but he says he swears by *K-O,* available from the Kill Odor Co. in Cleveland. So don't say we didn't warn you if you find yourself mixed up in a stink bombing and fresh out of *K-O,* the perfect de-stinker.

Ironized Health Drink

■ We have often heard of, but never seen, the old practice of sticking a red hot poker into a glass of ale or stout. As a matter of fact, we never knew just why it was done until we were looking over the August issue of *The Edgar Allen News,* and learned it was to introduce a minute percentage of iron into the drink. With the old fashioned iron poker it was easy to burn a finger, but they claim their heat-resisting steel, *Maxhete,* can be handled up to within six inches of the red hot portion without feeling a bit of heat. Can't you just see your favorite bar with a little heat treating furnace chock full of the new fangled pokers. Maybe everyone will have his own, like the old time shaving mugs.

Oldest?

■ STEEL, you know, has been growing up with its industry for over half a century. We were impressed, indeed therefore to have a friend of ours casually mention his company was now coasting through its 144th. year. Bird & Sons, Inc. up in East Walpole, Mass. first saw the light of day when George Washington was debating on a second term. We've temporarily given them the record—do you know of any older oldster?

STEEL Has Umph

■ Those two recent articles on the St. Lawrence Waterway project are good examples of that extra something it takes to keep 68,000 noses buried in STEEL every week. Perhaps, too, that is why STEEL had a higher subscription renewal percentage over the last year than any contemporary.

Fall Guy

■ We have never been much on buying at close-out sales because we're always too much excited about the season that is just coming up. Last week we tried to get worked up over a pair of "drastically reduced" summer shoes but as we dawdled outside the store window the crisp tinge of the cool breeze made them seem dull and uninteresting. Instead we stood there thinking of burning leaves, football, and long evenings at home.

—SHRDLU

are taking heavy melting steel and dealers have little to offer; turnings are quiet with only occasional sales reported, and other steel materials are inactive. Electric furnace operators and foundries are inquiring for machinery cast and there is a good market for all available supplies.

Warehouse

Warehouse Prices, Page 65

Cleveland — The rather sharp improvement in sales and shipments out of warehouse stocks noted early this month has failed to maintain the pace within the last week to ten days. In a few instances distributors report current bookings have fallen below the comparable period during July. Despite the decline in new business recently, shipments during August will show an increase of approximately 10 per cent over July.

Chicago — Sales have tended upward slightly this month, being moderately above the low volume of June and early July. More substantial improvement is expected to be deferred by seasonal influences until September and October. Business is well diversified.

New York — While some of the larger warehouse distributors of steel will barely attain July volume during August, others report the month slightly ahead. Most sales are being made on lighter products with structurals and plates lagging.

Philadelphia—Some leading jobbers believe August tonnage will exceed that of July and in dollar value might be comparable in spite of the price reduction. Others believe tonnage will be held but dollar value be less.

Buffalo — Warehouse distributors report that during the last seven to ten days satisfactory improvement has been shown in sales. Movement of specialties was particularly encouraging. Heavy lines also were in better demand but sales are still light.

Cincinnati—Individual orders for warehouse items are small, with total purchases close to July volume. Potential needs of some classes of consumers are piling up, giving basis for belief sales in September will be heavier. Prices are fairly well stabilized.

St. Louis — Business of warehouses during the first three weeks of August shows a measurable increase over the comparable period in July. The betterment extends fairly well through the entire line, but is most marked in sheets, strip and tubular goods. Wire and wire products are more active than heretofore.

Iron Ore

Iron Ore Prices, Page 66

New York — Continued strength in Chinese wolframite abroad has had no effect on demand here. Consumers are still well covered, considering the volume of current demand for tungsten products, and while anticipating better business this fall, they are disposed to wait until there are more tangible evidences.

They all agree that anything might happen with respect to new hostilities in other parts of the world, which might lead to higher prices on tungsten. However, with one apparent crisis after another in recent weeks, they are inclined to regard war rumors with a certain equanimity.

Trade in general looks for a reduction in tungsten ore rather than a further increase of importance, particularly since current prices are well above normal levels. With this belief in mind and under no pressure to replace stocks, consumers believe they have little to lose and probably much to gain by continuing to mark time.

No important wolframite ore purchases have been reported here for some time. This also is true of domestic scheelite, which, of comparable grade, is holding at around the equivalent of $15 duty paid, with a few small scattered orders at this figure during recent weeks. Imported scheelite, of an especially high grade, is being offered at around $21 to $22, but these prices are largely nominal. Such increases as the present range implies reflect the trend in Chinese wolframite.

Ferroalloys

Ferroalloy Prices, Page 64

New York — With further gain in steelmaking operations, sellers of ferromanganese are inclined to revise earlier estimates as to shipments in August. Whereas the opinion until recently was that the movement this month would be no more than sustained, as compared with July, many trade interests now believe that it will be somewhat increased.

Ferromanganese is still being quoted by domestic producers at $92.50, duty paid, Atlantic and Gulf ports. The trade now generally looks for no further price action until at least the middle of next month, when sellers will likely make quotations for the last quarter. In view of the sharp reduction at the beginning of this quarter many believe there will be no further change, notwithstanding the easier offerings abroad, which have resulted in some sales in this country, although involving a small aggregate tonnage.

Tungsten metal powder is lower at $2.05 per pound in 200 drum lots for spot shipment and $2.15 in less than drum lots.

Steel in Europe

Foreign Steel Prices, Page 65

London—(*By Radio*)—Stocks of pig iron at furnaces on the northeast coast of Great Britain were increased during the holidays. Four more furnaces have been blown out and it is hoped production has been proportioned to demand. All steel markets are quiet. No change in prices is expected until the end of the year. Mills producing light steel products are operating only part time.

The Continent reports a decline in export trade, partly due to political unrest. The price situation is uncertain.

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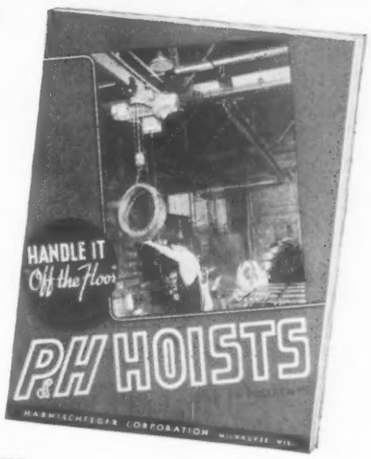

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Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound

Aug.	Copper: Electro, del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin, New York: Spot	Straits Tin, New York: Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot, N Y.	Nickel Cathodes
20	10.12½	10.25	9.65	43.00	43.30	4.90	4.75	4.75	20.00	10.75	35.00
22	10.12½	10.25	9.65	42.87½	43.12½	4.90	4.75	4.75	20.00	10.75	35.00
23	10.12½	10.25	9.65	42.90	43.10	4.90	4.75	4.75	20.00	10.75	35.00
24	10.12½	10.25	9.65	43.60	43.80	4.90	4.75	4.75	20.00	10.75	35.00
25	10.12½	10.25	9.65	43.20	43.40	4.90	4.75	4.75	20.00	10.75	35.00
26	10.12½	10.25	9.65	43.45	43.65	4.90	4.75	4.75	20.00	10.75	35.00

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F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 10.12½c Conn. copper

Sheets

Yellow brass (high) 16.75
Copper, hot rolled 18.25
Lead, cut to jobbers 8.00
Zinc, 100 lb. base 9.75

Tubes

High, yellow brass 19.50
Seamless copper 18.75

Rods

High yellow brass 12.75
Copper, hot rolled 14.75

Anodes

Copper, untrimmed 15.50

Wire

Yellow brass (high) 17.00

OLD METALS

Nom. Del. buying prices

No. 1 Composition Red Brass

*New York 6.00-6.25
*Cleveland 7.25-7.50
*Chicago 6.50-6.75
*St. Louis 5.75-6.00

Heavy Copper and Wire

*New York, No. 1.....7.75-8.00
*Cleveland, No. 1.....7.75-8.00
*Chicago, No. 1 .....8.00-8.25
*St. Louis 7.50-7.75

Composition Brass Borings

*New York 5.40-5.75

Light Copper

New York 6.22½-6.50
*Cleveland 6.50-6.75
*Chicago 6.50-6.75
*St. Louis 5.75-6.00

Light Brass

*Cleveland 3.75-4.00
*Chicago 4.25-4.50
*St. Louis 4.00-4.25

Lead

New York 4.00-4.25
Cleveland 3.75-4.00
*Chicago 4.00-4.25
St. Louis 3.50-3.75

Zinc

New York 2.50-2.62½
Cleveland 2.25-2.50
*St. Louis 2.50-2.75

Aluminum

*Borings, Cleveland 6.25-6.50
*Mixed, cast, Cleveland 8.75-9.00
Clips, soft, Cleveland.....12.25-12.50
*Mixed, cast, St. Louis.....7.75-8.00

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads 10.75
*Standard No. 12 aluminum...13.75-14.25

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GRANITE BUILDING, PITTSBURGH, PA.

Nonferrous Metals

New York — A sharp drop of 5 points on tin featured the close of the nonferrous domestic market late Friday, reducing the price to 43.45c from the previous prices of 43.50c at noon.

Antimony for the first time this year advanced one-half cent from the previous price of 10.75c, for spot American metal, and 10.50c, in bulk, from Laredo, Tex.

Highlight of the week was the consumption uptrend of domestic nonferrous metals, reflecting higher fabricating operations, larger shipments to consumers and further decreases in surpluses.

Copper—Rise in exports to 10.23c c.i.f. to all European ports brought the market up higher than in recent weeks. Copper consumption has run ahead of deliveries of raw materials to consumers for no less than 13 consecutive months. Japan again, early Friday, bought copper from the domestic mart. Demand in the domestic market continued quiet and the prices held unchanged at 10.12½c Connecticut.

Lead — Speed with which most lead sellers received releases on the metal for August shipment and continuation, until late in the month, of prompt sales mean to observers that consumption is keeping pace with shipments. Prices, however, held at 4.90c, New York, and 4.75c, East St. Louis.

Zinc — Producers are more optimistic and are receiving larger orders as evidenced by the constantly higher rates of galvanizing operations. Prime western held at 4.75c East St. Louis.

Tin — Desire of consumers to clean up tinplate stocks in anticipation of some price adjustment on plate is keeping the market fairly quiet, with buyers buying sparingly. Straits spot closed at 43.45c, dropping from 43.50c.

River Shipments Show Fair Gain in July

■ Total shipments and shipments of iron and steel products on the rivers in the Pittsburgh district improved somewhat in July over June, according to United States engineers' office, but the totals are still far below last year's figures.

In July 77,580 short tons of steel products moved on the Ohio river, an increase of 19,500 tons over June; 163,705 short tons of steel products were shipped on the Ohio in July, 1937. Total shipments of all products on the Ohio were 754,700 in July, an increase of 51,000 tons over June.

On the Monongahela river, 43,450

short tons of steel products were carried in July, against 39,270 in June, an increase of 4180 tons; 128,200 short tons of steel products were carried on this river in July, 1937. Total shipments on the Monongahela during July were 1,141,200 short tons, an increase of 115,000 tons over June.

The Allegheny river carried 2520 tons of steel, against only 45 tons in June, an increase of 2475. Last year July tonnage in steel products totaled 15,750. All products carried on the Allegheny in July amounted to 246,120 short tons, an increase of nearly 40,000 tons over June.

Steel Industry Moves Westward

■ FORTY-SEVEN per cent of the country's finished iron and steel output in 1937 was produced in Ohio, Indiana, Illinois and Michigan, according to the American Iron and Steel institute. As recently as 1901 these states produced little more than one-fourth of total output.

Increasing importance of the Midwest was accompanied by corresponding decreases in proportion of the total produced in Pennsylvania, New England, New York and New Jersey.

Pennsylvania steel mills in 1875 rolled 39 per cent of that year's total of 1,688,000 gross tons; in 1901, Pennsylvania produced about 56 per cent of the 12,349,000 tons total; in 1937, the state's output represented only 30 per cent of the 36,766,000 tons total. Pennsylvania, however, still ranks first among steel-producing states.

Ohio rolled 13 per cent of the country's total in 1875 and 1901, but in 1937 produced 21 per cent. Mills in Indiana and Illinois accounted for 13 per cent in 1875, 15 per cent in 1901, 21 per cent in 1937.

Rapid growth of Michigan as a steel-producing state is attested by the fact that hardly a dozen years ago its output represented less than 1 per cent of the total, while in 1937 it produced 5 per cent of the nation's steel.

Output of finished products by mills south of the Ohio river and east of the Mississippi was about 10 per cent of the total in 1875, 7 per cent in 1901, 13 per cent in 1937.

Mirrors of Motordom

(*Concluded from Page 20*)

der, are to be priced in the Chevrolet-Ford-Plymouth class, and already have been given several hundred thousand miles of road tests. Production of subassemblies is scheduled to start Sept. 15, with final assemblies planned for Oct. 1. A press preview probably will be arranged for Sept. 28, at which the two new low-price lines and the two present higher-price lines with refinements, will be exhibited.

Hupp has purchased, at a cost of about $1,000,000, all production tools, jigs, fixtures, material inventory, designs and other property of the Cord Corp., Connersville, Ind., and it is considered likely the new small Hupps will show some resemblance to the late Cord as a consequence. Releases of material and parts are expected to be made by Hupp this week for initial new model requirements.

Involved in the rebirth of Hupp has been a fairly sweeping change in personnel, S. L. Davis, for years one of the largest Hupp distributors, now being president, succeeding Tom Bradley who has resigned.

Plymouth is taking delivery early in September of over 200,000 valves claimed to be made by a new process from a new type of silchrome steel, and to be used in new model engines.

Chrysler Motors is reliably reported to have taken options on a 65-acre site at Newark, Del., for a large parts warehouse, which may later be converted into an assembly plant.

Steel Export, Import Statistics for July

(*Continued from Page 26*)

Mining, well and pumping equipment exports in July were valued at $8,177,260, against $5,764,288 a year ago. A large increase was made in petroleum well and refining equipment and several classes of pumps, but these were offset almost entirely by lower sales of mining equipment.

Power-generating equipment, except electric and automotive, was valued at $1,039,002 in July, compared with $1,381,981 a year ago, a loss of 25 per cent. Construction and conveying machinery exports were valued at $1,745,007, a decline of 20 per cent from $2,175,727 in July, 1937.

Textile machinery exports were 48 per cent lower than a year ago, and all other types of equipment were 30 per cent lower.

FARM TOOL EXPORTS OFF

■ Farm equipment exports in July were valued at $7,632,848, a decline of 7 per cent from July, 1937, when they totaled $8,186,409, according to the machinery division, department of commerce. Harvesting machin-

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ery and seed separators were exceptions to the general trend, the former gaining 93 per cent and the latter 41 per cent over July, last year.

Harvesting machinery exported in July was valued at $2,138,888, compared with $1,104,753 a year ago and seed separators at $400,791, compared with $282,314. Exports of tractors and parts were 22 per cent below those of July, 1937, with value of $4,052,492, compared with $5,271,721. Tillage implements exported were valued at $632,031, a drop of 31 per cent from the $922,690 value of such exports in July, 1937.

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UNITED STATES EXPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Articles	July, 1938	June, 1938	Jan. thru July, '38
Pig iron	10,371	24,639	226,151
Ferromanganese and spiegeleisen	4	61	224
Other ferroalloys	51	105	706
Ingots, blooms, etc.:			
Not containing alloy	17,779	10,383	136,197
Alloy incl. stainless	83	188	4,982
*Steel bars, cold fin.	1,870	1,263	10,076
Bars, iron	36	159	894
Bars, concrete	2,199	1,158	10,466
Other steel bars:			
Not containing alloy	5,019	9,370	67,344
Stainless steel	14	13	225
Alloy, not stainless	295	219	2,537
*Welding rods, electric	132	100	667
Wire rods	1,312	3,392	18,279
Boiler plate	193	693	4,742
Other plates, not fab.:			
Not containing alloy	16,000	9,718	113,361
Stainless steel	2	2	136
Alloy, not stainless	82	129	1,974
Skelp iron or steel	1,023	429	7,641
Shee'ts, galv. iron	272	451	2,272
Sheets, galv. steel	7,821	6,622	41,252
Sheets, "black" steel:			
Not containing alloy	13,934	15,405	112,959
Stainless steel	110	141	1,300
Alloy, not stainless	8	358	2,297
Sheets, black iron	678	937	4,100
Strip steel, cold-rolled:			
Not containing alloy	1,185	2,858	14,459
Stainless steel	37	50	277
Alloy, not stainless	27	40	146
Strip steel, hot-rolled:			
Not containing alloy	1,417	2,089	18,239
Stainless steel	43	.....	103
Alloy, not stainless	3	6	42
Tin plate, taggers' tin	12,802	12,840	102,029
Terne plate	360	346	2,917
Tanks, except lined	2,466	3,536	19,822
Shapes, not fabricated	6,173	7,428	55,461
Shapes, fabricated	1,998	2,769	21,424
Plates, fabricated	1,113	3,729	17,580
Metal lath	61	61	588
Frames and sashes	155	61	827
Sheet piling	83	116	1,952
Rails, 60 lbs.	371	774	32,430
Rails, under 60 lbs.	962	92	3,926
Rails, relaying	627	146	4,273
Rails fastenings	724	307	3,990
Switches, frogs, etc.	110	187	1,093
Railroad spikes	162	114	1,093
R. R. bolts, nuts, etc.	46	49	477
Boiler tubes, seamless	572	1,267	8,127
Boiler tubes, welded	26	28	1,327
Pipe:			
S'mless cas'g, oil-line	3,153	3,028	33,339
Do. welded	69	174	9,119
Seamless black, except casing	773	655	4,389
Pipe fittings:			
Mall. iron screwed	254	230	1,790
Cast iron screwed	154	249	1,180
Pipe and fittings for:			
Cast iron pressure	1,712	1,223	7,514
Cast iron soil	940	946	5,832
Pipe, welded:			
Black steel	943	736	6,079
Black wrought iron	196	358	1,411
Galvanized steel	1,109	1,095	6,959
Galv. wrought iron	95	136	1,351
Pipe and fittings:			
Riveted iron or steel	99	10	930
Wire:			
Plain iron or steel	2,527	2,093	12,994
Galvanized	3,140	2,362	13,801
Barbed	3,820	3,011	15,092
Woven wire fencing	234	289	1,185
Woven wire screen cloth:			
Insect	33	26	136
Other	60	86	650
Wire rope and cable	204	336	2,230
Wire strand	69	49	555
Card clothing	...	11	34
Other wire	539	489	3,372
Wire nails	2,264	1,547	10,331
Horseshoe nails	27	35	573
Tacks	20	11	122
Other nails, staples	555	424	2,350
Bolts, machine screws	643	604	4,779
Castings:			
Gray iron, semi-steel	329	293	2,058
Malleable iron	81	103	876
Steel, not alloy	65	137	789
Alloy incl. stainless	78	153	514
Car wheels, tires, axles	1,889	3,561	14,127
Horseshoes and calks.	1	2	52
Forgings, n. e. s.:			
Not containing alloy	461	640	4,499
Alloy incl. stainless	9	25	246
Total	137,276	149,955	1,254,642
Scrap, iron and steel	125,399	160,577	1,910,771
Scrap, tin plate	359	775	6,402
Tin plate, circles, strips, cobbles, etc.	329	224	3,117
Waste-waste tin plate	336	490	4,446
Total scrap	126,423	162,066	1,924,736
GRAND TOTAL	263,699	312,021	3,179,378
Iron ore	142,282	38,888	211,663

*No distinction prior to 1938.

Equipment

Cleveland—August machine tool bookings will be about on par with the July rate, with spotty improvement reported from some quarters. September is expected to bring a moderately sharp upturn, generally estimated at 30 per cent above August level. Especially promising are prospects from automotive plants. Agricultural implement, aircraft, shipbuilding and small metalworking shops also are contemplating additional purchases.

Buying plans of most plants still are in the tentative stage and await end of the vacation season. Large inquiries are lacking although prospects are discussing probable needs with sellers. Deliveries on most items will be offered promptly in September, although some builders still are working on backlogs of export business.

Seattle—Low bidder to bureau of reclamation, Denver, for three electric generators, each 108,000-kilovolt-amperes, is Westinghouse Electric & Mfg. Co., Pittsburgh, at $2,611,000. The three units weighing in excess of 3500 tons, will be installed at Coulee dam where 18 additional generators will be placed as power demand develops. District engineer, Bonneville dam, will receive bids Sept. 27 for two large generators, estimated to cost $2,000,000. Ohio Brass Co., Barberton, O., has been awarded the contract at $45,336 to furnish 35,400 insulators for the Bonneville transmission line and same department will open bids Sept. 15 for 250,000 heavy insulators for high tension line from Bonneville. Boilers, stokers and other equipment are involved in a $250,000 powerhouse project at Hillyard, Wash., for Great Northern Ry., bids in to headquarters at St. Paul. Bids for turbo alternators, condensors, auxiliaries and other equipment for Puget Sound navy yard, costing $350,000, were opened at Washington Aug. 24. Seattle has $11,500 available for three 196-kilovolt disconnecting switchers, bids to city light department Sept. 1.

Construction and Enterprise

Michigan

DEERFIELD, MICH.—H. W. Tuttle & Co. has been incorporated with $50,000 capital to manufacture machinery; John S. Michener, Adrian State Bank building, Adrian, Mich.

DETROIT—Wayne Metalcraft Corp. has been incorporated with $50,000 capital to manufacture machinery. Correspondent: Hardy Pagels, 13100 Washburn avenue.

DETROIT—Wolverine Foundry Supply Co. has been organized with $50,000 capital to operate general foundry by Charles G. Yahne, 812 Blaine avenue.

DETROIT—Grinnell Tool & Mfg. Co., 703 Barlum tower, has been organized with $5000 capital to engage in general manufacturing; Clifford C. Stone, 14674 Mayfield avenue.

DETROIT—Carboloy Co. Inc., manufacturer of cemented carbide tools and dies, has begun construction of a new $700,000 factory and general offices. The new plant, to be erected on the north side of Eight Mile road, will bring under one roof the entire manufacturing facilities of the several plants now located at Cleveland, Stamford, Conn., and Detroit. General contract has been awarded to O. W. Burke Co., Detroit.

GROSSE POINTE PARK, MICH.—Maryland Tool & Die Co., 1211 Maryland avenue, has been organized with $5000 capital to manufacture tools and dies, by George Duncan, 1254 Lakepoint, Detroit.

SAGINAW, MICH.—Michigan Sugar Co. is launching a $414,000 plant improvement and repair program. Boiler house improvements constitute the largest item in the $110,000 improvement program at Saginaw, while general repairs will cost approximately $53,000 at its Caro plant and the same amount will be spent at Sebewaing, where a new centrifugal station will be installed.

Maine

PORTLAND, ME.—Pocahontas Fuel Co., 820 Statler building, Boston, proposes to erect a plant, cost of which will exceed $40,000.

New York

YONKERS, N. Y.—Yonkers Electric Light & Power Co. and Westchester Lighting Co. plan expansion of power house. Cost to exceed $100,000.

Pennsylvania

CHESTER, PA.—Scott Paper Co. will install motors and controls, regulators, switchgears, conveyors, electric hoists and other equipment in new addition to tissue paper mill, including improvements in present plant. The power house also will be extended and additional equipment installed. Work is scheduled to begin soon. (Noted July 18)

SHARON, PA.—Sharon Steel Corp. has begun work on a $90,000 addition to its plant, 50 x 60 feet, and will install equipment.

Ohio

CLEVELAND—Weldrods Corp. recently organized to make welding wire, has purchased five acres of land in Cuyahoga Heights, O., where it will erect a plant and install equipment estimated to cost $500,000. The firm is a subsidiary of Air Reduction Co. Inc., 60 East Forty-second street, New York.

MASSILLON, O.—Shacomax Corp., recently organized, has taken over the former plant here of the Reynolds Mfg. Co. and is equipping it with machinery for the manufacture of aviation equipment, specializing in army and navy products.

Illinois

CHICAGO—Atchison, Topeka & Santa Fe Railroad, G. W. Harris, chief engineer, 80 East Jackson boulevard, will soon let contract for diesel repair plant, 122 x 271 feet, costing approximately $300,000.

DIXON, ILL.—Illinois Northern Utilities Co. plans extensions in primary and secondary lines. Cost over $50,000. Work will begin soon.

EAST ST. LOUIS, ILL. — Midwest Smokeless Fuel Corp., care of R. S. Smith, of Smith, Moore & Co., 509 Olive street, St. Louis, plans coal processing plant, including installation of 20 carburizing ovens and coal washer. Cost $1,000,000.

ROCKFORD, ILL.—Elco Tool & Screw Corp. has awarded contract to Sjostrom & Sons Inc. for construction of two-story factory addition, 67 x 180 feet. Peterson & Johnson, Swedish-American Bank building, architects.

Indiana

ELKHART, IND.—Trailer Equipment Mfg. Corp., 812 Harrison street, has been organized to manufacture trailers and trailer parts, by G. E. Bradley, Irene Bradley and Clarence Bradley.

ELKHART, IND.—C. S. Kegerreis Supply Inc., 113 State street, has been formed to manufacture tools, hardware, heating and plumbing equipment, by C. S. Kegerreis, M. B. Van Dorsten and Carlton T. Olds.

Alabama

SCOTTSBORO, ALA.—PWA has approved loan of $72,000 and grant of $58,000 for constructing electric distribution system and substation. Estimated cost $130,000.

Georgia

STATESBORO, GA.—City, C. E. Layton, city engineer, plans expenditure of $156,824 for improvements to sewage and waterworks systems.

North Carolina

GREENVILLE, N. C.—PWA has approved $168,545 grant toward construction of addition to electric light plant; docket No. 1356-P; and will install 5000-kilowatt additional system generating capacity and improve existing power station. Total estimated cost $374,545.

South Carolina

BOWMAN, S. C.—PWA approved grant of $15,791 for waterworks and distribution system, costing $35,000. Plans provide for two wells, pumps, pump houses with equipment, elevated storage tank, etc.

UNION, S. C.—PWA approved grant of $123,000 for improvements and extensions of waterworks, including construction of filter plant, installing four pumps and motors, and a 400,000-gallon elevated storage tank. Total cost $275,000.

Tennessee

TIPTONVILLE, TENN.—Erection of new municipal electric distribution system with transmission lines is planned. Cost about $120,000.

Louisiana

RUSTON, LA.—City is having plans prepared by J. W. Smith & Associates, Monroe, La., for power plant to cost $125,000.

West Virginia

MILLVILLE, W. VA.—Potomac Edison Co., Hagerstown, Md., has let contract to Sanderson Porter Construction Co., 52 William street, New York, for rebuilding burned hydroelectric power plant.

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Virginia

RICHMOND, VA.—Virginia Electric & Power Co. plans construction of an addition to its Twelfth street power house here, consisting of 40,000-kilowatt turbo-generator and steam boiler. Estimated cost $3,000,000.

Oklahoma

PRAGUE, OKLA.—PWA has approved $31,909 grant toward construction of power plant estimated to cost $70,909; docket No. 1284-P; and will install generating facilities and improve municipally-owned distribution system.

Wisconsin

HORICON, WIS.—Van Brunt Mfg. Co., maker of grain drills, plans construction of an addition to its factory and improvements to the present plant.

MILWAUKEE—Central Iron & Metal Co. has been incorporated by Sam and Maurice Kimmel and M. L. Cabbe.

MILWAUKEE—Foundry Materials Inc. has been incorporated to deal in foundry supplies, by A. B. Weller, Oscar Webel and F. Trailier.

MILWAUKEE—A. Gettelman Brewing Co. has started construction of a bottling plant, 83 x 111 feet, to cost about $40,000, and will install new bottling equipment and machinery.

MILWAUKEE—Powell Mining Equipment Co. has been organized to deal in coal and other mining equipment, by Clarence P. Nett, Roman Papka and M. E. Caravella.

WAUKESHA, WIS.—Ferris Mfg. Co. has been incorporated to manufacture automobile accessories and equipment, by W. P. Ferris, A. F. Potts and Glenn R. Dougherty.

Minnesota

CANBY, MINN.—Union Public Service Corp. will soon take bids for erecting new power plant boiler and addition to power plant. Cost $150,000. R. D. Thomas & Associates, 1200 Second avenue, Minneapolis, engineers.

CLEVELAND, MINN.—PWA has approved grant to city for waterworks system consisting of well, pump house, pump, pressure tank and distribution system. C. E. McDonald is engineer.

FAIRFAX, MINN.—Village will open bids Sept. 7 for construction of an addition to the municipal light and power plant and, will install diesel engine generating and auxiliary equipment. A. E. Carver is village recorder. G. M. Orr & Co., Baker Arcade building, Minneapolis, engineer. (Noted June 20)

LANESBORO, MINN.—PWA has approved grant to village, A. O. Amdahl, clerk, for construction of sewer system and sewage disposal plant costing $113,670. Toltz, King & Day Inc., Pioneer building, St. Paul, consulting engineers.

MOOSE LAKE, MINN.—PWA has approved grant for construction of sewage disposal plant to cost $39,220. Charles K. Handschie, Moose Lake, engineer.

SPICER, MINN.—PWA has approved grant to city, Norman Christensen, mayor, for waterworks system, including pump, pump house and tank and tower costing $48,800. Druar & Milinowski, Globe building, St. Paul, consulting engineers.

WATERVILLE, MINN.—City has PWA grant for sewerage system and disposal plant to cost $146,487. Ralph W. Richardson, Oppenheim building, St. Paul, consulting engineer.

Texas

HOUSTON, TEX.—L. J. Smith Steel Co., 615 Velasco street, plans erecting plant, 90 x 140 feet.

HOUSTON, TEX.—Armour & Co., Union Stock Yards, Chicago, plans installation of motors and controls, regulators, conveyors, electric hoists and other equipment in new multi-unit meat packing plant here. A power house will also be built. Cost $1,000,000. Company engineering department at Chicago is in charge.

LUFKIN, TEX.—Southland Paper Mills Inc., Ernest L. Kurth, president, plans to begin construction soon of proposed $7,500,000 newsprint mill, with capacity of 50,000 tons of newsprint annually. Construction under direction of George F. Hardy, engineer, 305 Broadway, New York.

North Dakota

MINOT, N. DAK.—State board of administration, Bismarck, N. Dak., has received PWA grant for construction of addition and for improvements to power plant and equipment at state teachers' college, to cost $63,700, including two new boilers. A. B. Welch, Bismarck, is executive secretary. W. F. Kurke, Fargo, N. Dak., is engineer. (Noted July 11)

VALLEY CITY, N. DAK.—PWA has approved grant to state board of administration, A. B. Welch, secretary, for alteration of power house and equipment to cost $30,909. William F. Kurke, Fargo, N. Dak., engineer. (Noted July 11)

Nebraska

HASTINGS, NEBR.—Central Nebraska Power and Irrigation district, R. O. Canaday, secretary, will take bids until Sept. 9 for construction of Jeffrey Canyon power plant, a part of the $30,000,000 Central Nebraska irrigation and power project. Bids will also be received for construction of a substation and transmission lines, four headgates with motor-driven hoists, and regulating inlet reservoir. H. S. Hunt, Jackson, Mich., consulting engineer. George N. Carver is construction manager.

KEARNEY, NEBR.—Buffalo County Public Power district, Justus Johnson, secretary, is seeking additional REA loan for construction of 75 miles of rural transmission lines to serve 200 customers. Robert Fulton, 2327 South Nineteenth street, Lincoln, Nebr., is consulting engineer.

LAUREL, NEBR.—Jiffy Mfg. Co. has been incorporated with capital of $25,000 to manufacture a new pipe-laying machine, by Earl Schuler, president; E. P. Voter, vice president; Evelyn Jeffrey, secretary, and C. W. Fahnstock, treasurer.

Iowa

DAYTON, IOWA.—City has been allotted PWA grant for construction of municipal light and power plant and for equipment, to cost $66,000, including generating equipment, deep well pump, distribution system, etc. George Tarrant is city clerk. Ralph W. Gearhart, Cedar Rapids, Iowa, is engineer. (Noted July 11)

DE WITT, IOWA—Eastern Iowa Power & Light Co-operative, J. N. Jordan, manager, will seek an additional REA allotment of $900,000 to extend its rural transmission lines in Cedar, Muscatine, Louisa and Clinton counties.

IOWA CITY, IOWA—PWA has approved grant to the University of Iowa, W. H. Cobb, business manager, for installation of air conditioning equipment in three buildings on the campus to cost $35,000. George Horner, Iowa City, is architect.

KEOKUK, IOWA—Curtis Power & Light Co. has filed application with the federal power commission for a license to construct a low dam hydroelectric project on the Des Moines river near Hindsale, Iowa.

Colorado

DENVER—Bureau of reclamation, Custom house, receives bids until Sept. 7 for two 14,000-horsepower vertical shaft, single runner, Francis type hydraulic turbine units; two oil pressure governors for such machines; two 12,500-kva, 6900-volt, 60-cycle vertical shaft ac electric generators, etc., for installation in Grand Coulee hydroelectric power plant, Grand Coulee, Wash. All equipment will be installed by the government. Specifications 788.

Montana

FORT PECK, MONT.—War department, Maj. Clark Kittrell, district engineer, Fort Peck, will receive bids until Sept. 6 for prefabricated sections for construction of a steel utility barge and steel derrick boat hull for use on the Fort Peck diversion and power project.

LIVINGSTON, MONT.—Examining division of the REA has approved application of the Park Electric Co-operative, Fred L. Kistner, president, for construction of 93 miles of rural transmission lines to cost about $111,000. (Noted June 20)

Idaho

ST. ANTHONY, IDAHO—City proposes construction of hydroelectric plant to cost $326,979, and has applied for $147,141 PWA grant.

Pacific Coast

BONNEVILLE, OREG.—United States engineers office will take bids until Sept. 13 for two 74,000-horsepower hydraulic turbines for Bonneville generating station, including governors, control gates, gate steam levers and auxiliary equipment.

COULEE DAM, WASH.—Reclamation bureau will build a two-story structure to accommodate machine, welding, painting, carpentry, plumbing and electrical departments.

VALDEZ, ALASKA—City has applied for loan of $35,273 and grant of $32,703 for construction of municipal light and power plant to cost $72,673. E. M. Stewart, Fairbanks, engineer.

Canada

WINNIPEG, MAN.—Fibre Soaps Ltd., care of Clive J. MacLeod, 303 Lombard building, Winnipeg, is preparing plans for erection of factory for manufacture of cleaning and cleansing supplies. New equipment will be installed. Estimated cost $40,000.

LEASIDE, ONT.—Argo Oil Co. Ltd., 5 Industrial street, plans oil refinery estimated to cost $500,000.

MONTREAL, QUE.—McCall Frontenac Oil Co. Ltd., J. M. Pritchard, vice president, Notre Dame East, is having plans prepared for oil refinery at Regina, Sask. Cost about $500,000.

MONTREAL, QUE.—Skid Chek Caneds Ltd., care of George F. Foss, 4326 Colbourne street, is having plans prepared for factory for manufacture of chemical compounds and products. Estimated cost $49,000.

Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Want To Work, Not Starve

To the Editor:

The letter of "Vice President of Pennsylvania Manufacturing Company," STEEL of Aug. 22, gave me a pain.

If he thinks that his slogan "Work or Starve" is a good cure for the relief of the working man's double burden, might I suggest that he step down to the office of his personnel director and employment manager and listen and talk to some of the men that are seeking work. Better yet, if he would go out and try to find employment in some other field than the one that he is in at present.

From his perch behind the protecting sign of "Vice President" he views the world as a nut that he has cracked by his own little process, that includes what in his mind is work. This bravado must hide something.

What the "Vice President" is really getting down to is the government aid for unemployed. If he should inspect the path of some of the money that the government is "dishing out," he will no doubt find that some of it is coming back to his own pocket.

A STEEL WORKER

Lakewood, O.

Industry Not To Blame

To the Editor:

A few days ago I heard a discussion of unemployment before the Veterans of Foreign Wars, meeting at Columbus, O., by A. W. Robertson, chairman of the board of the Westinghouse Electric & Mfg. Co., which I thought hit the nail on the head.

The whole problem of unemployment is one that is usually laid at industry's door, and unfairly so, Mr. Robertson said. Even in the best times, only about half the population is engaged in business and industry. Manufacturing actually engages in good times considerably less than 25 per cent of the population, so it can hardly be responsible for all the country's unemployment.

"The manufacturer offers his goods for sale, and if they are not bought or used by the public he can give no work," he explained. "It is idle for demagogues to tell the manufacturer to employ men when there is no work. No business can run on any such basis, and it takes little wit to know this is true.

"This doesn't change the fact, however, that men out of work are a problem which should cause everyone concern. And industry is concerned. Its employes are its first concern because it knows that it has no life or existence except through them. It values them above its customers and delays posting the notice that there is no work as long as possible. It pays wages long after dividends are discontinued. Well-ordered industry started pensions and welfare long before government ever thought of such a thing."

So, after all, the captains of industry started some of the best things in the New Deal before the government even thought of them. Many of us believe the pension plans by employers promise much better security for the worker than the government plan now in operation.

VETERAN AND EMPLOYER

Canton, O.

Steel and Abundant Life

To the Editor:

If any argument were needed in support of the statement that increased living standards in this country are due to steel it could be found in the statement of the American Iron and steel institute on per capita share of steel in use (STEEL, Aug. 29, p. 16).

As individuals and as a people we owe the steel industry a debt for its successful efforts to spread the use of steel into innumerable channels touching the daily life of each. Compare the living standards of 1900 with those of today and note where steel has entered the picture to improve our surroundings. The automobile, better roads and bridges, farm tractors, trucks and a wide variety of uses radiating from these have increased the ease of living and of gaining a livelihood.

In the home steel has given us better refrigerators and sanitary kitchen and bathroom appointments in enameled material; air conditioning and automatic firing of our heating plants.

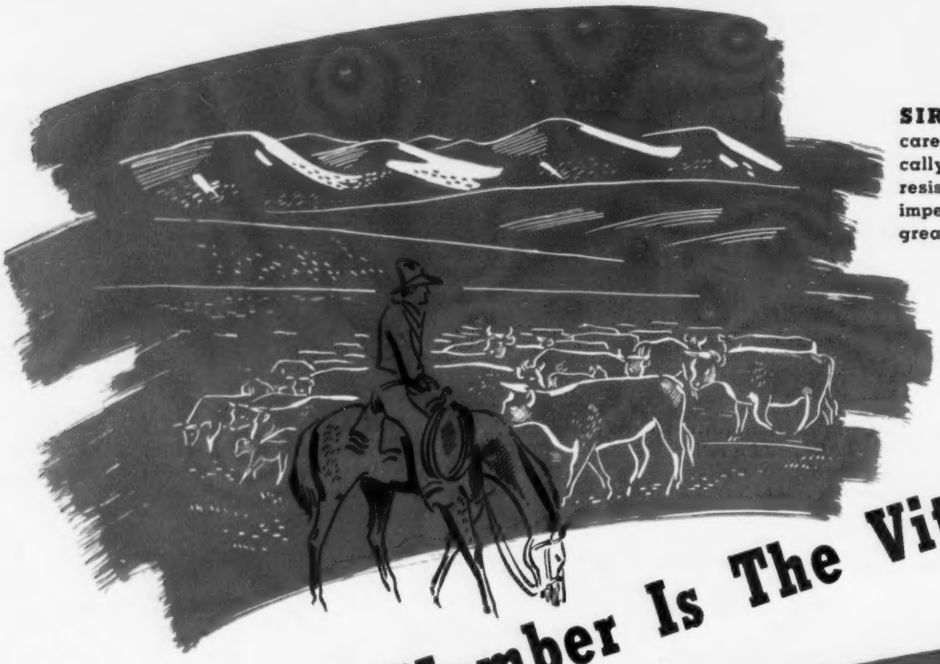
These are only a few of the obvious applications that have made life in the United States the best in the world. Scores of others might be named. Airplanes, stainless steel for ornamental and sanitary applications, special alloys for every special need, tin plated steel containers that keep foods fresh for off-season use.

Another contribution is the broadening of employment by new avenues opened up as a result of wider application. In the present century scores of new industries have sprung up, employing hundreds of thousands of workers, all owing their genesis to steel. A moment's thought will supply instances of this.

Yet few industries are subjected to the criticism and constant baiting by government and labor that is being handed out constantly to steel companies. Instead of being rewarded for meritorious achievement they are held up to the public gaze in an entirely opposite light. When will some leader arise to lead them out of the desert and into a land of promise?

ENGINEER

Newark, N. J.



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